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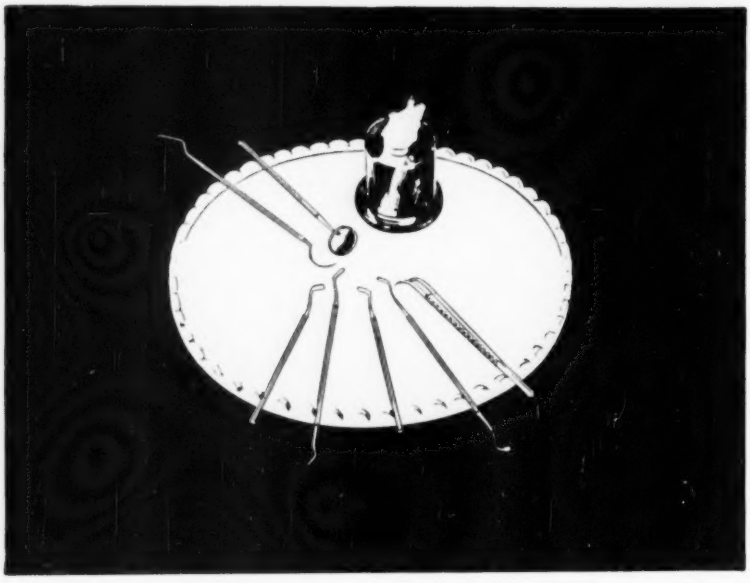

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The Dental Journal of Australia

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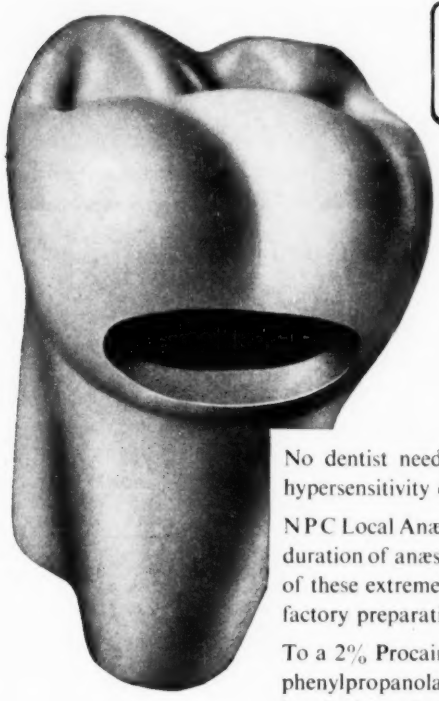

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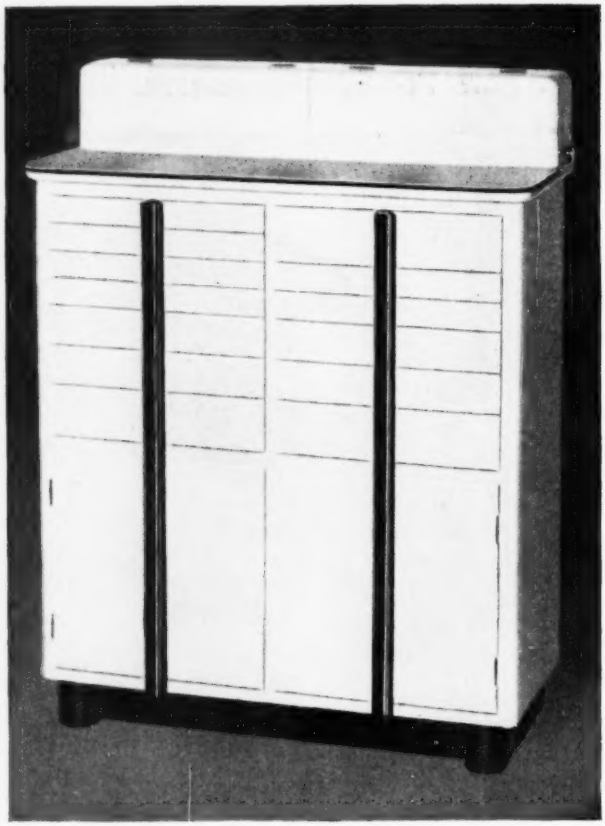

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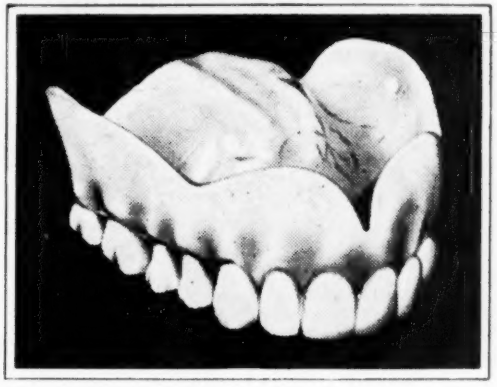

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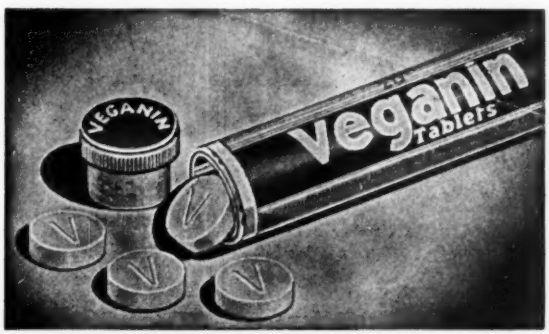

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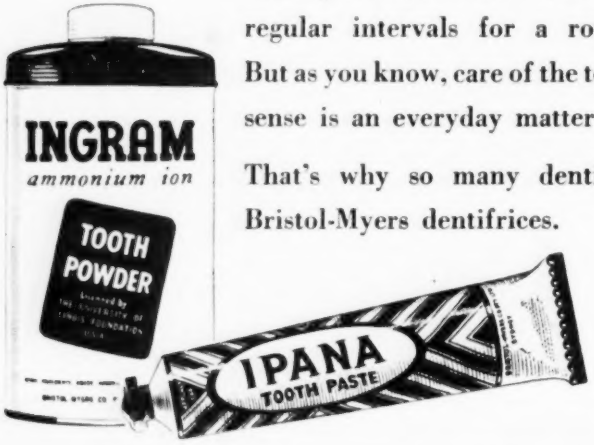

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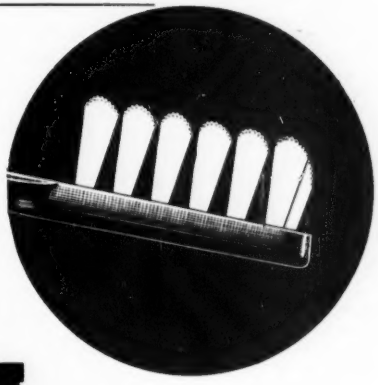

NADA

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The DENTAL Journal OF AUSTRALIA

Haemorrhage*

C. C. Croker, B.D.S. (Syd.).†

Dentistry has made so much progress in comparatively recent years that at the present time the mouth is considered to be the realm of the dentist. He has been trained to observe the normal appearance of the various structures in the mouth, so that he may diagnose readily pathological conditions when present. Dentists should realise that the mouth is a small part of the whole organism and they must also realise that disease, infection and haemorrhage in this area affects the whole body. Conversely, systemic conditions may, in many instances, affect the mouth. Unfortunately, owing to the high incidence of periodontal disease and dental caries in Australia, the number of extractions performed is very great. Indeed, practically no Australian goes through life without having some of his permanent dentition extracted and, in far too many cases, the whole complement has to be removed.

The removal of teeth, either by forceps or the flap technique, is a surgical procedure and, should haemorrhage occur, the dentist must be prepared both by way of knowledge and equipment to deal with the situation. Furthermore, if the patient is suspected to be a bleeder, tests should be made before treatment is commenced, and may be performed by the operator or by a trained pathologist. However, should bleeding occur, the treatment is the responsibility of the dentist and he should be prepared to carry out the procedures necessary to control bleeding, if he wishes to operate on this portion of the body. It is his legal and moral duty to carry this out, and he must do so if he wishes to maintain his status in the eyes of his patients and the allied professions of medicine and nursing. It is possible in very severe cases that the general practitioner may need assistance from the oral surgeon and, in certain cases, even from the medical practitioner, for instance, where blood loss has been great and possible transfusion is required.

Haemorrhage may be described as the escape of blood from the blood vessels. This could be classified as: (i) arterial, (ii) venous, (iii) capillary. It is not necessary for the blood to appear on the skin or mucosa; it may occur in natural cavities such as the joints or in the tissues, as is sometimes seen following oral surgery when a haematoma occurs and, for this reason, it is important to control all bleeding after surgery before flaps are sutured into position.

This gives another method of classifying haemorrhage: (a) external, (b) internal.

Yet another method, is the time of the occurrence of the bleeding in relation to the injury or surgery; this may be divided into three distinct periods, which are referred to as: (1) primary, (2) intermediate, (3) secondary. *Primary* haemorrhage occurs immediately following the division of the vessel; *intermediate* haemorrhage occurs some hours after the division of the vessel; *secondary* haemorrhage results from the ulceration of a vessel's wall before the clot has become organised; it is usually due to infection, but does not occur until two to three days after injury.

Frequently primary haemorrhage ceases of its own accord, due to the contraction and retraction of the injured blood vessels. However, if a blood clot does not form during this time or is not firmly attached to the walls of the vessel, haemorrhage may recur when the vessel dilates. When adrenalin or other vaso-constrictors are contained in the local

*Presented at the 12th Australian Dental Congress, Sydney, August, 1950.

†Superintendent of the United Dental Hospital, Chalmers Street, Sydney.

anaesthetic solution, they assist in the contraction of the vessel, but later there is active vaso-dilation.

The control of bleeding is also assisted by the fall of blood presure, as is sometimes seen in cases of shock and where general anaesthesia is used. When the patient rallies from shock the blood pressure rises and the insecure clot may be forced from the mouth of the divided vessel. In like manner stimulants, exercise or alcohol may bring about the same result following extraction.

Physiology of Haemostasis.

Haemostasis and coagulation are often looked upon as synonymous terms, but this is far from true, as haemostasis is actually composed of three processes: (i) vascular response; (ii) agglutination; (iii) coagulation.

It is very unlikely that such a complex organism as the human body would rely entirely on coagulation to guard against the loss of such an important element as blood following some form of injury.

Vascular response has already been dealt with above. Agglutination refers to the blood platelets, which become sticky following injury and agglutinate together. They also play a part in the third process, coagulation. The accepted theory is that of Morawitz, which is divided into two parts: (i) thromboplastin + prothrombin + calcium = thrombin, and (ii) thrombin + fibrinogen = fibrin[1]. There have been many additions to this theory but the basis still stands. It was shown by Quick[2] that calcium was combined with the prothrombin molecule so (i) then became thromboplastin + prothrombin calcium = thrombin. It has furthermore been observed that a precursor to thromboplastin, namely, thromboplastinogen, is present in the plasma and is activated by an enzyme, thromboplastinogenase which is liberated from damaged platelets, i.e., thromboplastinogenase + thromboplastinogen = thromboplastin[3]. Naturally some such mechanism must exist since thromboplastin could not occur in the blood normally in a free state without coagulation of the circulating blood. More recently it has been shown that prothrombin is not a single substance but a "complex." Terms such as "labile factor," "component A", "component B", "factor 5", "factor 6", "acglobuin, an accelerator factor", have made their appearance. Owren[4], following investigations of cases in Scandinavia during the last war, advanced his theory:

(i) prothrombin + factor 5 in the presence of thromboplastin and ionised calcium = factor 6.

(ii) prothrombin in the presence of factor 6 and ionised calcium = thrombin.

It is possible that many of the terms used above are synonymous and this has been claimed as true by many workers. The term "accelerator factor" is suggested but whatever the term is called it does not alter the basic structure of the theory.

Quick and Stefanini[5] have shown that prothrombin appears in two forms, namely, the "free form" and the "inactive form". The latter, he states, cannot be converted to thrombin, but when plasma is brought in contact with a relatively rough surface, e.g., glass, the inactive form is converted to the active form and so the amount of prothrombin activated is increased. In brief, equation (i) of the original hypothesis could now read:

Thromboplastin + prothrombin complex = thrombin.

It has recently been shown that there are further complications in the second equation, the thrombin and fibrinogen reaction. Baumberger[6] suggests that the fibrinogen molecule has two or more SH groups which are oxidised by thrombin, so that the fibrinogen molecules are chained together by the S/S bands forming fibrin. Lyons[7] has extended this theory, suggesting that the SH groups in the circulating fibrinogen are blocked, and this form is known as fibrinogen A. He supposes that during coagulation fibrinogen A is acted upon by a thrombin component, thrombin A, exposing SH groups and forming fibrinogen B. A second compound of thrombin, known as thrombin B, then acts on fibrinogen B oxidising the SH groups and forming fibrinogen.

Symptoms of Haemorrhage.

General symptoms: Weakness, pallor and gradual increase in the rate of the pulse. The pulse becomes faster, feebler and smaller in volume until finally the beats can no longer be distinguished by the finger. The pallor is seen in the lips which become paler and finally almost white, while the complexion becomes yellowish-white and waxy. Later symptoms: extreme restlessness, deep laboured breathing (air hunger), subnormal temperature and cold extremities; finally, the muscles become relaxed and death occurs through cardiac failure.

Local symptoms: This concerns mainly the appearance of the blood which varies according to whether it is arterial, venous or capillary.

(a) *Arterial*: This is bright red and spurts out with some force, the spurts corresponding with the heart beats; the

proximal end of the artery bleeds the more freely.

(b) *Venous*: Deeper red in colour and flows evenly. The distal end bleeds the more freely as the valves in a healthy vein prevent bleeding from the proximal end.

(c) *Capillary*: Bright red blood which oozes slowly from a large number of minute points of a cut surface.

Treatment of Haemorrhage.

1. Arrest the haemorrhage.
2. Maintain blood supply to the brain.
3. Restore the blood pressure to normal.

Numbers 2 and 3 will be considered first. In cases of severe haemorrhage, measures must be taken to maintain the blood supply to the brain until the circulation generally can be restored. Naturally, restoring the blood pressure will assist in supplying blood to the cerebral circulation. This can only be done when the bleeding has been controlled. Lowering of the head and raising of the limbs will assist in maintaining the blood supply to the brain; stimulants should not be used until the bleeding is definitely controlled[8]. Although the above general principles are correct, it must be remembered by the dentist that lowering the head would increase the bleeding if the site of the injury is in the mouth.

The blood pressure may be restored by raising the volume of circulating fluid to normal.

Arrest of Haemorrhage.

Down the ages man has tried many and varied methods for controlling bleeding: methods used today are the combination of many procedures which have come into use during evolution. It is possible to divide the findings of these methods into eight phases; (there is naturally considerable overlapping and combination).

Phase 1—*pressure.*

There is evidence to show that neolithic man recognised the fact that pressure would control bleeding. It is recorded that he applied crushed leaves and tied the wound up with strips of bark. Pressure is the oldest method of haemorrhage control and has played a large part in all methods down the ages. It is both logical and simple, and still plays a vital role in the latest methods employed today. The chief factor against the use of this method is that the dressing must be removed, and this action frequently causes bleeding to recommence.

Phase 2—*cautery.*

(a) *Styptics* (*chemical cautery*). Prehistoric man used crushed leaves of plants as a styptic and in ancient India alkaline powder was used. It is recorded in the 17th Century that various animal and vegetable materials were used, namely, cobwebs, hares' fur, does' fur and other drying agents. These were replaced by chemical styptics such as vitriol and alum. Gradually styptics are becoming conspicuous by their absence. Styptics in use today are both vegetable and mineral; the most common ones used are tannic acid and ferric chloride (liq. and tinct.). Tannic acid is a mild astringent produced from nutgall and may be used on gauze, as a mouth wash or incorporated in vaseline for a socket dresing. Other preparations advocated for use are ferro pyrin, which is a combination of anti-pyrin and ferric chloride, and alum which can be used either as potassium alum or ammonium alum. Another preparation which can be used to control haemorrhage from bone is Horsley's Bone Wax—carbolic acid 1 part, olive oil 2 parts and white wax 7 parts.

(b) *Heat.* As soon as prehistoric man learnt to make fire, he applied it to bleeding wounds as a means of haemostasis. The advent of electricity gave cautery, with its cutting and coagulating attachments, a new place in surgery. The change is a chemical one and coagulation of the tissues has been described by one authority as "cooking the tissues to a necrotic crisp". The eschar may cause secondary infection and also may separate, causing renewed haemorrhage.

Phase 3—*the tourniquet.*

The discoverer of the tourniquet is actually unknown and it is probably the combination of many observations by various men, but for obvious reasons this method is not used in surgery of the head and neck, and it is reported in general surgery that it is used too frequently.

Phase 4—*the ligature.*

The old Thessalian chiefs of the 13th Century B.C. were stated to be acquainted with the use of the ligature[9]. Paré was the great champion of the ligature and discarded the use of hot irons in amputation in favour of this method. He has often been credited with the discovery of the ligature, but this is not correct. Lister, in 1869, devised carbolised catgut, a sterile absorbable material. Buckskin, doeskin, goatgut, catgut, had been tried by various surgeons down the ages, seeking an absorbable material, but infection intervened in many cases. Although some surgeons prefer an absorbable material, others use

non-absorbable materials, considering they cause less tissue reaction, e.g., cotton, silk, nylon, rayon and stainless steel.

Phase 5—the haemostat.

Prior to the use by Paré of the "bec-de-corbin" or bullet-grasping instrument, surgeons using ligatures employed a hook to pull up the vessel, the hook being held in the mouth while the suture was tied[9]. The bullet-grasping instrument had no ratchets, so was held in one hand whilst the suture was tied with the other.

Phase 6—biological preparations, and whole blood and blood fractions.

Adrenaline hydrochloride of strength 1/1000 is used to produce vasoconstriction of the vessels; the effect lasts from half an hour to one hour. This material, originally a biological preparation, is now prepared by synthetic means as are several other materials with similar action.

Ephedrine hydrochloride, which is used mainly in 1% solution, has a greater and longer effect than adrenalin. The length of its activity, however, may produce sloughing.

Cobefrin hydrochloride. This is a synthetic compound chemically related to adrenalin; the solution has a constriction effect only one-fifth that of adrenalin and so is far inferior to adrenalin as a haemostatic.

Cushing was the first to suggest natural clotting agents as a method of increasing coagulation, when in 1918 he used striated muscle for this purpose and, incidentally, proposed the use of blood fractions in haemostasis[9]. In 1918 Harvey used "papers" of beef fibrin for haemostasis. In 1938 Seegers called attention to the plasma fraction *thrombin* and developed this material from brain plasma for use as a haemostatic agent to small bleeders. The use of this material in large bleeders is contra-indicated as propagating thrombi may form.

Thromboplastin was produced by Parke Davis from brain tissue and has been used to hasten clotting, but the use of thrombin is more important as from the theory of coagulation it can be seen to occupy a much more important position.

Fibrinogen. This substance has also been used to a minor extent. Early in World War II, Cohn of Harvard Medical School carried out a big programme on the isolation of blood fractions. Eight fractions were the subject of clinical trial and of these thrombin, fibrinogen and fibrin foam have been used for clotting purposes. Fibrin foam and thrombin were used clinically by Ingraham and Bailey in neuro-surgery in 1944[9].

Fibrin foam is a crisp, springy substance processed from human blood. When dry it is light, porous and slightly brittle and can be crushed into powder between the fingers. It is possible to cut and shape the material with a scalpel. The pores rapidly fill when liquid thrombin is applied, causing a slight shrinkage, and it becomes soft and pliable. Letts and Frantz report that it does not interfere with the healing of bone fractures.

Bactericidal agents can be used in conjunction with this material and without change in the properties of the foam and any subsequent reaction. As it is made from human blood it is difficult to obtain and great efforts have been made to find substitutes.

Plasma and whole blood are used in transfusions to restore lost blood volume following severe haemorrhage and so restore the blood pressure. This method also supplies certain of the factors which may be missing in certain haemorrhagic conditions. For the latter purpose fresh whole blood is the most satisfactory.

Snake venoms are another haemostatic agent which can be classified under biological preparations. They may be divided into two classes: (i) those which act like thrombin, i.e., convert fibrinogen to fibrin, and (ii) those which activate prothrombin. The tiger snake belongs to the first group while the Russell viper is the best representative of the second. The latter has been used successfully by Macfarlane to treat haemophilia[10].

Phase 7—absorbable materials.

(1) *Oxidised cellulose* was first prepared by Yackel and Kenyon[11] in 1942 and a variety of experiments were later carried out by Frantz[12] who reported her experiments in 1943. Hutton made the first use of this material in neuro-surgery and its use has now spread to practically all fields of surgery. Cotton, gauze, thread and paper may be oxidised and used where necessary: the degree of oxidisation may be varied.

Properties. It is an off-white colour, about two-thirds the tensile strength of the original fabric, remaining stable for one to three years; the texture is closer and consists of a morbid packed mass of tangled fibres. Decomposition is manifested by a brownish discolouration and loss of tensile strength and finally the material is reduced to a brittle mass. It is thermolabile and decomposes above 80° C. and so it should

not be autoclaved or stored in a heated place. It absorbs six or seven grams of blood per gram of material on an average. The above figure applies to OXYCEL.* With thrombin it inactivates this substance owing to the residual acidity in the fibres. This depends largely on the amount of oxidised cellulose and the amount of thrombin; the acidity is quite moderate and small amounts of cotton are neutralised by the buffering capacity of the thrombin solution itself. If the thrombin is dissolved in the sterile sodium bicarbonate solution of 2.5%, the amount is sufficient to avoid significant loss of thrombin activity. If one wishes to be absolutely certain of no loss of activated thrombin, neutralisation of the fabric can be carried out, remembering that the result is a very much more friable material.

The mass of oxidised cellulose absorbs blood and forms a gel, giving a framework for the formation of fibrin by enmeshing the cells among the fibres and, further, the mass swelling also aids haemostasis by pressure. It has also been suggested that the oxidised cellulose combines with the haemoglobin in producing a styptic effect. The gauze becomes sticky and more pliable when wet with blood and develops a dark brown or black appearance. Cysts have been known to form but eventually absorb. In the case of the material OXYCEL, the sterilization is caried out by formaldehyde.

(2) *Gelatin sponge* was introduced by Corkell and Wise in 1945 and was used to carry thrombin[13]. It is a light off-white, non-elastic, tough, porous material and may be cut into any shape and size, and does not disintegrate rapidly even with rough handling. It may be wet rapidly and worked vigorously in the damp fingers or sterile gloves; by this procedure the cell walls are moistened and air expelled from the numerous pores. It will then absorb liquid rapidly and may be squeezed out again if necessary and used repeatedly.

(3) *Alginates.* Alginates are derived from seaweeds which grow on the Scottish and Irish coasts. It was noticed that when the seaweed was broken or damaged the injury was healed by the plant juice which, on coming into contact with the calcium ion of the seaweed, produced a protective coating which secured the plant against further injury. The primary seaweed derivative is alginic acid but, as it is unstable, sodium alginate is the basic product from which the alginates used in surgery are made. Like agar or gelatin, bacterial growth takes places upon it and so 0.1% of chlorocresol is added to preserve it and keep it sterile.

By the action of calcium chloride on sodium alginate an insoluble calcium alginate is immediately precipitated which is capable of being woven into various forms, the wool and ribbon gauze being of most use in dentistry. These materials are capable of being sterilized by the autoclave. The rate of absorption of the alginate products can be controlled by variations in the proportion of sodium and calcium alginate, and so giving a range from seventy-two hours to three to four weeks.

Two other forms of alginate can be used in dentistry, namely, (i) alginate solution which consists of solutions of sodium alginate and calcium chloride and can be applied alone or in combination with alginate gauze, the former solution being applied first and then the latter converting the sodium alginate to a gel composed of calcium alginate; (ii) alginate powder—a bactericidal styptic powder, recommended by Blockley[14], consisting of sodium alginate and calcium penicillin powder which on contact with blood forms an artificial clot.

Physiological properties: It has been stated that the sodium alginate brings about the agglutination of the blood cells and suggested in other quarters that the calcium alginate has haemostatic properties due to the release of free calcium ions. The above may not be true, but it at least forms a gel holding a large quantity of blood within its meshes which clots and, in addition, by swelling, assists in haemostasis by pressure. The alginates are compatible with penicillin and the sulpha drugs, can be autoclaved, and are neither toxic nor antigenic.

Phase 8—agents which act after being absorbed by the circulation.

(1) The lack of vitamin K is frequently the cause of hypoprothrombinaemia. This vitamin is an important material and without it the liver is unable to manufacture prothrombin. It occurs naturally in the diet and can also be synthetised by bacteria in the intestines. Vitamin K, like all the fat soluble analogs, requires bile for its absorption from the intestines. In obstructive jaundice, where absorption is decreased owing to the lack of bile, the trouble may be overcome by feeding the patient bile, either orally or parentally. Sprue and biliary fistula bring about the same result, and vitamin K administration is of assistance in these cases. Sulpha drugs taken orally reduce the production by sterilizing the alimentary canal, particularly those sulpha drugs used in the treatment of enteritis. Newborn infants have little prothrombin stored

*A product of Parke, Davis & Co., Detroit, Mich., U.S.A.

and, as the gut is usually sterile, production does not commence immediately, so the child may develop a marked hypoprothrombinaemia known as haemorrhagic disease of the newborn. Vitamin K is of no use in congenital cases of hypoprothrombinaemia but the prothrombin can be elevated above the haemorrhagic level by the use of transfusion. It is also useless in atrophic cirrhosis or hepatitis, as in these cases the trouble is due to the inability of the liver to use the material, not to a lack of the vitamin or the failure of the body to absorb it from the gut.

Cattle were found to suffer from a haemorrhagic condition after eating certain types of clover and the active factor was found to be dicumarol. This is now used in antithrombin therapy; the therapy, however, may cause a haemorrhagic state which can be embarrassing for the dental surgeon. Dicumarol probably acts by interfering with the synthesis of prothrombin but may act as an anti-vitamin, that is, it is utilised by the body in place of vitamin K, producing an inert product instead of a true vitamin. It is suspected that dicumarol is stored in comparatively large quantities in the liver. Salicylates may also depress prothrombin level, the action being very erratic, causing little effect in most people and great in others.[15] The mode of action of this drug is probably similar to dicumarol. Penicillin also produces hypoprothrombinaemia by interfering with the synthesis of prothrombin or possibly by the suppression of bacterial growth in the intestines.

(2) Calcium was used considerably in antihaemorrhage therapy up till comparatively recently. Quick has shown, however, that a very small quantity is required in blood coagulation and that actually prothrombin itself is a calcium compound.

Control of Bleeding in Dental Practice.

Many cases of post-operative dental haemorrhage are due to trauma both avoidable and unavoidable. The operator should endeavour to reduce trauma to an absolute minimum and correct the effects of any trauma which may occur, wherever possible. Following a normal simple extraction where the tissues have not been lacerated, it is good policy to (i) compress the socket between the thumb and index finger, reducing the aperture into the socket and, in addition, reducing the buccal plate to its normal position following expansion during the extraction; (ii) apply sutures in order that the soft tissues may be approximated as nearly as possible. These can be used in single extractions and are of even greater importance where a number of adjoining teeth have been extracted and particularly where, owing to split interproximal papillae, the labial or buccal flap tends to separate from the lingual or palatal flap. The trimming of the interproximal soft tissues and, in other cases, the trimming of the interproximal bone by means of rongeurs and bone file may be advisable. Where the patient presents with a history of bleeding it is advisable that certain tests be used to ascertain the possible nature of the haemorrhagic condition. Suggested tests are:

(1) Bleeding time.

(2) Coagulation time.

(3) Prothrombin time.

(4) Prothrombin consumption time.

(5) Platelet count.

(6) Capillary fragility test.

The following two schemes make use of these tests as an aid to diagnosis. Scheme one employs bleeding and coagulation time tests primarily.

A. *Bleeding and coagulation time normal.*

(a) Cuts, ulceration and erosion of vessels.

(b) Avitaminosis C or P?

(c) Hereditary telangiectasia—this is an hereditary dysplasia of the capillaries which is transmitted by both sexes as simple Mandelian dominant.

B. *Bleeding time prolonged but coagulation time normal.*

(a) Hereditary pseudohaemophilia. This haemorrhagic disease occurs in both sexes and is transmitted by both. It is suggested that it is due to insufficient agglutination of platelets. A faulty clot is formed but on examination the platelet count is found to be normal.

(b) Purpura.

(i) Thrombocytopenic purpura in which there is a numerical decrease in platelets but the capillary resistance test is positive; (ii) vascular purpura. In this condition the platelet count is normal or nearly normal.

C. *Coagulation time prolonged but bleeding time normal.*

(a) Prothrombinopenia.

(i) Lack of vitamin K in the intestines; (ii) failure to absorb vitamin K from the intestines; (iii) failure to utilise vitamin K following absorption; (iv) action of certain toxins; (v) essential or idiopathic hypoprothrombinaemia.

(b) Thromboplastinopenia is the cause of haemophilia (?).

(c) Fibrinogenopenia.

(i) Is acquired. This may occur following pneumonia, appendicitis, myelogenous leukemia and myelogenous sarcoma. (ii) Congenital.

The coagulation time test is very inaccurate and many workers now place little reliance on it. Authorities now place more reliance on a second scheme where tests, although more difficult, are more accurate, namely, the Prothrombin Time Test and the Prothrombin Consumption Time Test; the former is a test to determine whether the prothrombin level is normal and the latter whether the thromboplastin is normal[3].

Recently it has been show that both calcium and three other components constitute the prothrombin complex. This scientific fact is of no major clinical importance to the oral surgeon, but it must be remembered that component A is the only component that requires vitamin K for its synthesis and so vitamin K therapy is only of use when this particular component is missing.

In scheme two, prothrombin test time shows whether there is a deficiency of prothrombin. These deficiencies can be classified as follows:

I. Congenital.

II. Acquired.

A. Lack of vitamin K.

(a) Dietary deficiency:
(i) Haemorrhagic disease of the newborn.

(b) Sterilization of intestinal tract by sulfonamides or antibiotic drugs.

(c) Faulty absorption:
(i) Obstructive jaundice, (ii) biliary fistula; (iii) sprue.

B. Liver damage.

(a) Atrophic cirrhosis.

(b) Hepatitis.

C. Toxins.

(a) Dicumarol.

(b) Salicylates.

(c) Antibiotics.

The prothrombin consumption time will indicate whether the thromboplastin level is normal; if it is not the deficiency can be classified as follows:

A. Platelet factor dysfunction:

(1) Thrombocytopenia.

(2) Qualitative platelet defect (evidence still uncertain).

(3) Platelet enzyme inhibitor (haemophilia-like disease).

B. Hypothromboplastinogenemia.

(1) Hereditary haemophilia.

(2) Acquired (evidence still lacking).

The lack of thromboplastin as shown above can be brought about by a diminution of available thromboplastinogenase or by a deficiency of thromboplastinogen and, in addition, possibly a platelet enzyme inhibitor may cause a haemophilia-like disease.

Treatment advocated.

If a haemorrhagic disorder is detected in the tests appropriate measures should be taken where possible before extraction. In some disorders a definite therapy is indicated whilst in others no specific treatment is available and the dentist must proceed with great care, packing the socket with an absorbable material and, in addition, if bleeding should occur profusely it may be necessary to make arrangements for transfusion with the patient's medical advisers. In those disorders where therapy is to be used it may still be necessary to pack the socket with an absorbable material. In other cases there is no history of bleeding, but bleeding may occur either operatively or post-operatively and must be dealt with accordingly.

SUMMARY OF TREATMENTS.

1. Ligate vessels which are bleeding; naturally this applies to vessels in the soft tissues.

2. The use of sutures.

3. Pressure by means of gauze pads or tape without medicaments.

4. Pressure by means of gauze pads or tape with medicaments:
(a) Adrenalin; (b) tannic acid; (c) ferric perchloride.

5. Cautery:
(a) Heat; (b) chemical.

6. Horsley's Bone Wax.

7. Absorbable materials used without thrombin:
(a) Fibrin foam; (b) oxidised cellulose; (c) gelatin sponge; (d) alginates.

8. Absorbable materials with thrombin: (a) Fibrin foam; (b) gelatin sponge.

Bleeding vessels should always be ligated where possible and torn, soft tissues should be sutured. In the case of bleeding from a tooth socket, sutures are always useful, either alone or with some other method. If the bleeding is of a minor nature, frequently pressure alone for a few minutes by means of a gauze pad is sufficient to control the haemorrhage; the addition of adrenalin or tannic acid to the gauze can be a useful adjunct.

When the above method is not successful, the dentist may resort to the use of cautery and/or absorbable haemostatics in the case of bleeding from the soft tissues. Fibrin foam, gelatin sponge, oxidised cellulose, alginate gauze, alginate liquid or alginate powder may be used, whilst in the case of bleeding from a socket the bony cavity may be packed with either gelatin sponge, oxidised cellulose or alginate gauze. Adrenalin gauze was a useful means of controlling haemorrhage from a socket prior to the advent of absorbable materials, but since it was necessary to remove this material twenty-four or forty-eight hours after being packed into the socket, bleeding frequently occurred on removal and repacking was necessary; as a result, in many cases a "dry socket" occurred. Bleeding from a cyst wall frequently can be controlled by insufflating alginate powder to the bleeding surface. It has been shown that the use of thrombin topical is of great value, but it must be remembered that it can only be used with fibrin foam and gelatin sponge and, in addition, it must not be used where large vessels are involved.

The first step in the control of haemorrhage in dental practice is to remove all blood clot and blood, so that the operator may clearly see from where the bleeding is occurring. Bleeding may be from the socket or from soft tissue; if large clots are present, these should be removed with dissecting forceps and then the patient should be allowed to rinse with a tannic mouth wash; any remaining clots can be removed with warm saline solution. Fresh blood escaping from the socket should then be removed by an aspirator and the operator should make use of a mouth lamp to inspect the mouth so as to ascertain the exact position from which the bleeding is occurring. The author has used mainly oxidised cellulose (both HEMOPAK* and OXYCEL) for the control of post-operative bleeding from sockets, using the following technique:

First remove blood and clot as described above, then isolate the socket with gauze pads, packing a sterile piece of oxidised cellulose sufficiently large to fill the socket. The material is placed in the bony cavity, using a pair of dressing tweezers; immediately on coming into contact with the blood the material becomes a dark sticky mass. Owing to the change in the physical properties, a second pair of tweezers is required to pack the material but undue pressure should not be used as the material appears to swell and fills the socket. A suture should then be inserted to close the mouth of the socket and the patient instructed to bite on a gauze pad for a few minutes. If the bleeding is occurring from the gingival margin, care should be taken to carry the oxidised cellulose over the free gingival margins.

*A product of Johnson & Johnson, U.S.A.

REFERENCES.

1. Whitby, L. & Britton, C.J.C.—Disorders of the Blood, ed. 5, London, J.V.A. Churchill, 1947, p. 110.
2. Quick, A. J.—Haemorrhagic Diseases and the Physiology of Haemostasis, Springfield, Ill., Chas. C. Thomas, 1942, p. 29.
3. Quick, A. J.—The coagulation mechanism: Am.J.Clin. Path., 29:1016. 1949.
4. Owren, P. A.—Parahaemophilia: haemorrhagic diathethis due to absence of a previously unknown clotting factor: Lancet, 1:446, 1947.
5. Quick, A. J. & Stefanini, M.—The state of component A (prothrombin) in human blood—evidence that it is partly free and partly in an inactive or precursor form: Jour.Lab. & Clin.Med., 34:1203, 1949.
6. Macfarlane, R. G.—The present status of the blood coagulation problem: Medicine Illus., 3:153, 1949.
7. Lyons, R. N.—Thiol-vitamin K mechanism in the clotting of fibrinogen: Aust.Jour.Exper.Bio. & Med.Sc., 23:131, 1945.
8. Mills, G. P. & Humphreys, H.—A Text Book of Surgery for Dental Students, ed. 4, London, Edward Arnold, 1940.
9. Laufman, H.—Surgical haemostasis through the ages: Quart.Bull.Northwest.Univ.M.School, 21:252, 1947.
10. Quick, A. J.—*op. cit.* (2), p. 220.
11. Yackel, E. C. & Kenyon, W.O.—Oxidation of cellulose by nitrous dioxide: Jour.Amer.Chem.Soc., 64:121, 1942.
12. Frantz, V. K.—Absorbable cotton, paper and gauze (oxidised cellulose): Ann.Surg., 118:116, 1943.
13. Seegers, W. H. & Sharp, E. A.—Haemostatic Agents, Springfield, Ill., Chas. C. Thomas, 1948, p. 94.
14. Blockley, C. H.—A penicillin styptic for dental work: Brit.Dent.J., 82:213, 1947.
15. Rapp, G. W.—A cause of delayed haemorrhage after tooth extraction: J.A.D.A., 34:484-7, 1947.

Leptotrichia Associated with an Oral Infection

*T. G. Ludwig, B.D.S. (Syd.).**

Introduction.

Filamentous organisms of the genus *Leptotrichia* commonly occur upon the teeth and adjacent soft tissues. It is generally accepted that they have little pathogenic significance, but it has been claimed that they have been found in association with pathological conditions of the pharynx,[1] mouth and ear[2] and meninges.[3] The study of these organisms has been hindered by the great difficulty in isolating them, and it is probable that the role of *Leptotrichia* in lesions in the oral cavity will not be clarified until suitable methods of artificial cultivation can be devised.

In this paper a case is reported of an oral infection apparently produced by a filamentous organism morphologically similar to the *Leptotrichia*.

Case Report.

Clinical findings.

The patient, a female, aged fifteen years, was referred to the United Dental Hospital, Sydney. She appeared to be in good general health and had no history of any systemic diseases. She complained of pain associated with the lower left second molar. Upon examination a very slight swelling could be palpated externally at the angle of the mandible on the left side. There was a large carious lesion involving the occlusal surface and extending into the pulp chamber of the lower left second molar, radiographs of which showed an area of rarefaction in the bone surrounding the apices. The remaining teeth in this region were normal. The patient's temperature was normal and remained within normal limits throughout the course of the infection.

It was decided to remove the carious molar under a general anaesthetic, but due to a misunderstanding this was not done until ten days after the patient was first seen. The removal of the tooth relieved the pain, but the swelling persisted and continued to enlarge slowly, and so 300,000 units of procaine penicillin were administered daily for one week. At the end of this time a small, reddish, indurated swelling showing some tendency to point was present at the angle of the mandible. Extra-oral heat was applied and, after several days, drainage was established by incising the swelling externally. A small quantity of extremely viscous pus was evacuated which contained a large number of granules, many of which were very large, some being up to $\frac{1}{8}$in. in diameter. They were of a tough, fleshy consistency and proved difficult to emulsify.

After drainage had been established a rapid improvement in the patient's condition occurred. The swelling subsided and after dressings had been applied for a few days the patient failed to attend for any further treatment.

Laboratory Examinations.

Methods.

(a) *Stained films.* Films of the pus were stained by Gram's, Neisser's and Ziehl-Neelsen's methods. In addition films were prepared from the granules contained in the pus and stained by similar methods. Several of the larger granules were embedded in paraffin and sections were prepared and then stained by Gram's method.

(b) *Attempts to obtain cultures.* A variety of media were used in attempts to grow the organisms. Nutrient agar and nutrient broth were enriched with blood, serum, glucose and saliva in various proportions. In addition, tomato-peptone agar, Loeffler's medium, Robertson's cooked meat medium and sterile saliva to which glucose had been added were used. The media were inoculated with loopfuls of the pus with portions of the fragmented granules. Where solid media were used both surface and shake cultures were prepared. All cultures were incubated under both aerobic and anaerobic conditions at 37° C.

Results.

(a) *Examination of stained films.* An examination of the films prepared from the pus and stained by Gram's method showed numerous filamentous organisms lying amongst the pus cells. These organisms occurred as straight or curved, unbranched, thick threads varying in length from 20μ-200μ by 1μ - 1.5μ. The ends of the organisms were usually rounded, but some tapered at both ends. Most of the organisms stained irre-

*Working with the aid of a grant from the National Health and Medical Research Council of Australia, at the Institute of Dental Research, Chalmers Street, Sydney.

gularly, but some regularly staining forms were seen. Many showed constrictions of the cell wall, which were usually associated with the presence of a deeply staining body within the substance of the organism. There was little tendency towards segmentation. The filamentous organisms were the only organisms that could be seen in the films.

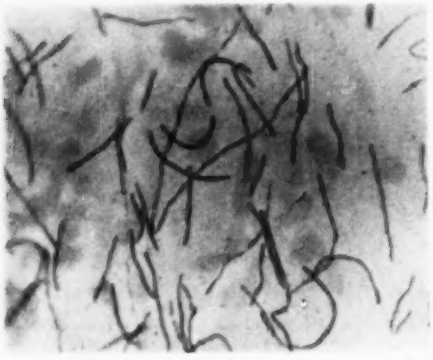

Fig. 1.—Filamentous organisms, corresponding morphologically to *Leptotrichia*, contained in pus isolated from a cervico-facial lesion.

The films stained by Neisser's method gave essentially similar results to those stained by Gram's method. The filamentous organisms were not acid fast, nor were any acid fast organisms detected in the pus.

The granules proved to be composed of filamentous organisms interwoven into almost a solid mass. This could best be seen in the stained paraffin sections of the granules. The organisms were identical with the forms occurring in the fluid portion of the pus. (Figs. 1 and 2.)

(b) *Attempts to obtain cultures.* Despite the varied media that were employed, it was not possible to obtain cultures of any organisms from either the pus or the emulsions prepared from the granules.

Discussion.

No pathogenic significance is claimed for the *Leptotrichia*, but it has been suggested that they have been associated with the infection of various tissues. It is possible, however, that they have been confused with the organisms of the genera *Fusiformis* and *Corynebacteria*.

They are often seen in the exudates from a variety of oral infections in humans, and occur frequently in pus from actinomycotic lesions. It is not known whether they play any part in the formation of these lesions, or whether they are merely accidental contaminants from the oral cavity. It has not been possible to demonstrate any pathogenicity by animal inoculation and Rosebury, Macdonald and Clark[4] have shown that *Leptotrichia* cannot be transmitted through laboratory animals.

Morphologically the filamentous organisms seen in the material evacuated from the swelling corresponded to the organisms of the genus *Leptotrichia*. Bibby[5] has reported the successful culture of a number of these organisms, but although his methods were followed cultures could not be obtained.

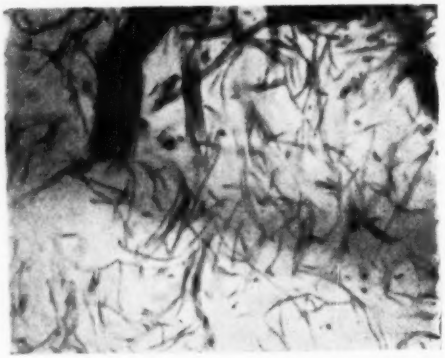

Fig. 2.—Section of granule, contained in pus isolated from a cervico-facial lesion, showing bundles of filamentous organisms corresponding morphologically to *Leptotrichia*.

The pus and granules from the lesion apparently contained only filamentous organisms. Only rarely must such material be available and the fact that cultures could not be obtained emphasised that as yet little is known of the growth requirements of the *Leptotrichia*.

It is possible that other organisms of the oral flora had access to the affected tissues, but none were recovered or seen. The distinctive features of the pus seemed attributable to the *Leptotrichia*, and it was felt that these were the main organisms concerned in the production of the lesion.

Summary.

A case report is given of a filamentous organism, corresponding to the *Leptotrichia*, apparently causing an oral infection. The pathogenic significance of these organisms is discussed.

ACKNOWLEDGMENT.

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REFERENCES.

1. Blumer & McFarlane.—cited in: A System of Bacteriology in Relation to Medicine, London, Med.Res. Counc., 1931, vol. VIII, p. 100.
2. Brown Kelly, A.—cited in: A System of Bacteriology in Relation to Medicine, London, Med.Res. Counc., 1931, vol. VIII, p. 100.
3. McDonald, S. & Slade.—cited in: A System of Bacteriology in Relation to Medicine, London, Med.Res. Counc., 1931, vol. VIII, p. 100.
4. Rosebury, T., MacDonald, J. & Clark, A.—A bacteriologic survey of gingival scrapings from periodontal infections by direct examination, guinea pig inoculation, and anaerobic cultivation: J.Dent.Res., 29:718, 1950.
5. Bibby, B. G.—A Study of the Filamentous Bacteria of the Teeth: Thesis submitted for Doctorate in Philosophy, Department of Bacteriology, University of Rochester, Rochester, 1935.

Periodontia for the General Practitioner*

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General dental practice is, perhaps, not the best preparation for the practice of Periodontia, as so much of the general practitioner's time and thought is, of necessity, concerned with tissues which for all intents and purposes are (1) non-vascular, (2) do not exhibit the classical phenomena or inflammation, and (3) only under special conditions undergo the process of repair.

The tissues, on the other hand, with which the periodontist has to deal, i.e., the alveolus, the peridental membrane, the cementum and the gingivae, are one with the living tissues of the body, and share in its metabolism. Further, the reactions they exhibit are pathognomic of poisoning by metallic salts or dusts, as are those seen in certain blood dyscrasias, and during pregnancy a friable and highly vascular tumour may make its appearance on the gingiva and, finally, the administration of the drug dilantin is usually followed by the production of a dense and massive gingival hyperplasia.

These things are regarded as commonplace, but they do not admit of a simple explanation. Why, indeed, should the gingival tissue be the site of the reaction during the administration of dilantin? Why should the pregnancy tumour not be found anywhere else than on the gingival tissues? Where shall an explanation be sought?

Within recent years, a factor known as "host" or "tissue specificity," has come to be recognised as exercising a powerful influence in determining the susceptibility of certain cells to a virus or bacterial invasion. Outstanding instances of this are to be found in the consistent absence of *Gonococci* from the nasopharyngeal tract and *Meningococci* from the urethra. Again, only a certain type of cell in the respiratory tract is invaded by the influenza virus. These reactions have been described as the "ability of host cells to participate in biochemical reactions with an organism or its products."

It would be interesting to pursue the question as to whether the occurrence of pregnancy tumours and the hyperplasia of the gingivae following the administration of dilantin are a similar type of reaction, and whether the gingivae are to be regarded as definitely differentiated tissues, even though there is nothing to suggest this from a histological point of view.

It seems possible that some such factor may have a certain controlling influence on the susceptibility of the gingival tissue to bacterial invasion or tolerance. These reactions of the gingivae have been stressed because they are the seat of the disease that is especially interesting to the general practitioner.

This discussion will be confined more or less to the disease commonly known as pyorrhoea. At the outset, the problem of its nomenclature arises. Numerous names have been suggested for this *universal, painless disease of man*, which appears without observation and proceeds if unchecked to the loss of the teeth, meanwhile damaging the health of the individual. In the author's opinion the accepted term is Pyorrhoea Gingivae, which

*From a lecture delivered at the Armidale Dental Convention, August, 1951.

emphasises an essential symptom—whether frank pus be present or not—and indicates the tissue involved.

The essential lesion in pyorrhoea lies in the destruction by *infective organisms of the delicate epithelium lining the gingival crevice, which is then converted into a granulating area.*

This area, whether minute or extensive, is the source of the pus and the bleeding, which are typical of the disease when well established. The lesion is painless and, in respect to the crevice, superficial, and may be looked upon as an indolent or chronic ulcer.

The lesions vary in extent, at times involving only a small area of the gingival sulcus, or if the whole crevice is involved it might well be regarded as a "circumvallate" ulcer. It is rootwise development of this ulcerated area that creates the pyorrhoeal pocket which is generally not uniform in depth. At times the lesion may extend toward the apex in a deep V making conservative treatment impossible. Martin[1] has observed that at a quite early stage in pocket formation its floor may be quite irregular owing to the presence of numerous sawtooth indentations, which become evident when the bottom of the pocket is examined with a fine explorer. It is necessary to emphasise the fact that the actual lesion in pyorrhoea is *within the pocket* and not external to it, though in a few odd cases one or two minute granulations may be seen protruding beyond the gingival margin. A section made of the soft tissues alone will demonstrate this, but it is more clearly seen in one which includes both hard and soft tissues.

The question is, does the disease commence within the pocket or not. Fish[2] contends that it begins as a minute ulcer or ulcers on the gingival margin due to trauma.

If this be the case, the initial lesion certainly heals rapidly once the disease has become established. Most will agree that pyorrhoea gingivae, as observed in the clean mouth, is not commonly asociated with a marginal gingivitis. Indeed, one of the features of the disease is the fact that deep pockets may be present beneath gingivae which appear to be perfectly healthy. Doubtless, it is for this very reason that countless patients are allowed to harbour the disease for years until a point is reached, often heralded by a period of ill-health, where the X-ray reveals it to be present at an advanced and incurable stage.

The lesion, as it occurs on the internal and external aspects of the tooth, is a comparatively simple affair and its development may be easily followed. The appearance of the gum surface over such an area shows considerable variation. If the disease has been present for a considerable time, or if the condition has been very active, the actual surface may be swollen and glistening. On the other hand, it may appear perfectly healthy.

Miscroscopic sections show the external epithelium to be irritated and hyperplastic. Long processes penetrate the underlying corium and these join with those from the more delicate epithelium of the crevice to form a confused network. The finer epithelial strands, when cut across in the section, might at first glance be mistaken for a malignant condition, and look like minute cell nests.

When we come to study the interdental lesion, and especially where it involves the gingivae in premolar or molar region, the whole process of pocket formation and extension becomes complicated.

The lesion and its destructive effects can be seen in its most aggravated form following the extraction of a molar tooth, more especially an upper molar tooth. Its real nature and its extent are generally obscured by the bleeding present. If, however, such an area be dried and examined previous to the extraction of the distal approximating tooth, the interdental gum will be seen to be separated into an internal and an external portion. Between these, a mass of friable granulations will usually be found. Most operators probably take this to represent nothing more than the result of trauma during extraction. However, in a vast proportion of cases, this is not so, and the extraction has but served to demonstrate what is believed to be the most serious of all pyorrhoeal lesions, i.e., the posterior interdental pocket. It is one which has literally wrecked countless mouths and has assisted in breaking the health and resistance to infection of an inestimable number of persons.

Once the disease has become established, the essential pathology of the interdental lesion is identical with that of the simple pocket, but its development in the early stages, and its insidious onset, possess features to which attention should be specially drawn. First of all, a significant series of changes takes place in the soft tissue which results in the formation of a slight depression or dimple in the interdental gum, the "primary dimple." This dimple appears so early that one would

hesitate to think of it as pathological. The sequence of events can be easily traced if during gingivectomy the whole resected mass of tissue is cautiously removed intact. If this be done, the development of the dimple can be seen in various stages through what I have called "invagination" to complete separation of the internal from the external gingiva.

In its final stage of complete separation, which may be called the "cleft" or "split" papilla, the external gum may appear red and swollen. However, at its commencement and indeed until the lesion is quite well developed, there is frequently a complete absence of any external sign or symptom which might indicate what is actually taking place beneath. In the advanced stage, after gingivectomy, when the external fragment separates of itself from the internal portion, the two can be fitted together. If this be done, one of the most interesting features of the condition may be seen, the heavy epithelialization of the opposing surfaces within the cleft. Such surfaces will never of themselves unite and can only be compared with the partly epithelialized external opening of a chronic sinus. Indeed, the cleft forms a kind of "pseudo" sinus, conveying exudate and, during trauma, blood into the mouth from the extensive diseased area beneath. This vertical division of the papilla is commonly found in the anterior part of the mouth, but it is not certain whether its development proceeds in the same manner as that described as occurring in the premolar and molar regions.

What is the practical significance of all this? Firstly, the early appearance with complete absence of external symptoms of the pyorrhoeal lesion between the posterior teeth. Secondly, from a practical point of view that in gingivectomy it is necessary to emphasise that the interdental incision must pass deeply below the cleft. Failure to do this will defeat the purpose of gingivectomy, and will result in the early re-appearance of the condition. If the fragment of gum be removed intact as described, and the areas not yet completely separated are closely examined, a faint hyperaemic line, suggesting the formation of a vertical groove, may at times be seen on either side of the opening which surrounds the tooth. This may represent the approach of the disease laterally which precedes the deep cleavage of the papilla.

The granulating tissue beneath the cleft varies in amount from that of a pinhead to a flabby mass of quite considerable size, or the area may be occupied by a single large granule. More frequently it is composed of numerous small granules, adherent to the alveolar septum and closely packed together.

The granules may be soft and friable, in which case they may be dislodged by forcing a mass of cotton wool through the interdental space. At times, however, and probably owing to some fibrotic change, they are tough and adherent and will require more drastic methods for their removal.

Whether it be in the "simple pocket," or in the more complicated intra-molar lesion, a progressive separation of the soft tissue from its attachment to the tooth is a constant feature of the disease. The epithelium of the gingival margin tends to follow the lesion rootwise, but never overtakes the ulcerated area unassisted. Once having developed, such a separation may be regarded as permanent, though, in a few cases, healing after gingivectomy is followed by a slight upgrowth with reattachment of the soft tissues to the tooth. Accompanying the activity of the irritated epithelium near the lesion, there is a very marked lymphocytosis invariably present. The small vessels show thickened walls, and all the classical signs of lowgrade chronic inflammation can be seen.

As well as the changes occurring in the gingivae, the most noteworthy are to be found in the alveolus. First, the alveolar margin loses its definite outline and is transformed into osteoid tissue. The principal fibres lose contact both with the alveolus and the cementum and remain for some time as minute functionless masses and finally disappear, and there is a corresponding decrease in the height of the alveolar margin. An alteration in the medullary spaces accompanies the absorption of the alveolar margin. These enlarge into fantastic lake-like spaces, intercommunicating with one another, and with the periodontal membrane.

It is problematical whether the bone changes described may be effected by giant cells or not, but they are a constant characteristic of all sections made of the affected tissues.

Strangely enough, the periodontal membrane seems to be little affected by what is taking place in its neighbourhood, although the membrane may act—except in the case of the periodontal abscess—as an effective barrier to the entry of infective organisms. The periodontal membrane does, however, become thickened, and thus gives that mobility to the tooth which is characteristic of pyorrhoea. With the removal of the infective gingival focus, the membrane resumes its former width, and this tendency to return to

normal is shared by the alveolus. The medullary spaces resume their normal contour and size and the traberculae recalcify. In some X-ray photographs taken after gingivectomy, a distinct sclerotic change is noticeable in the bone which has become much denser than normal. When this is accompanied by a marked narrowing of the periodontal membrane the teeth involved become distinctly firmer than they were previously. It should be pointed out, however, that alveolar sclerosis following gingivectomy is to be regarded as the exception rather than the rule.

It must be emphasised that under no circumstances is the absorbed alveolar margin restored to its former height and that, whatever the nature of the treatment followed, the teeth involved, with their supporting structures, must be regarded as commencing life again from that point.

Treatment.

The treatment of pyorrhoea gingivae, may be divided into conservative and radical, and must have for its objectives: (1) the elimination of the active focus of the disease, and (2) the creation of conditions which will not favour its return. This will involve the establishment of a hygienic condition of the mouth and the training of the patient in mouth hygiene.

(1) *Conservative treatment.*

As far as the conservative treatment of the disease is concerned it may be considered to be limited to a thorough removal of all calculus, both subgingival and that above the gum margin from the teeth, the correction of occlusal strain and removal of those teeth which create crowding and the development of stagnation areas in the mouth.

In order to facilitate the removal of subgingival calculus from the tooth it is the practice of some operators to pack the unattached gingivae away from the teeth by means of a special wax or zinc oxide paste. The effect of this procedure is twofold: (1) it facilitates the removal of subgingival calculus which might otherwise easily escape detection, and (2) if properly carried out it will suppress any granulations present within the gingival crevice and promote epithelialization. With the elimination of the active focus the secondary effects disappear, the swollen tissues become normal in appearance and assume a healthy pink colour.

With this form of treafment the destruction or elimination of the lesion itself will naturally be preceded by a thorough prophylaxis of the mouth in general, with special attention to the affected areas. Any lack of care in removing the subgingival calculus will, if the treatment be carried no further, certainly be followed by a return of the disease. This technique is not followed by the author except in odd cases. However, those who do so, and carry it out with meticulous care, claim satisfactory results from it.

In criticism of this method it might be said that the unattached gum is not thereby permanently reduced in height, and the damaged and asymmetrical alveolar septum is not brought to a proper contour. In some cases this may be a serious omission. But personal experience gives cause for little faith in the real efficacy of the so-called scalding and cleaning of the teeth as a means of controlling the disease when established. If "safe sided" scalers are employed, such instrumentation is almost useless, but if the subgingival calculus is removed with the type known as the Morse scaler, a good deal of "unintentional surgery" will of necessity be done at the same time. This curettage and removal or partial removal of the subgingival calculus, combined with the disturbance of the contents of the gingival trough, bacterial and otherwise, will invariably be followed by an improvement in the condition of the mouth, and the patient will usually return with the information that the haemorrhage from the gum has completely ceased.

Treatment of this kind may be temporarily successful when dealing with single rooted teeth, but to expect satisfactory results from it in the molar and premolar regions is, after all, only courting failure and disappointment. After many years, during which a great variety of treatments have been used, gingivectomy has proved to be the only satisfactory approach to the cure of pyorrhoea.

Gingivectomy.*

A detailed description of the technique of gingivectomy is not necessary, but the process of repair which follows the operation should be mentioned. Stones[3] was the first to demonstrate in the tissue of the dog the series of changes occurring in the operated tissues which consists in an actual reattachment of the epithelium of the gum to the cementum of the tooth. Apparently the epithelium requires approximately ten days before attachment is effected and only becomes attached to cementum which has been freshly exposed during operation and not that which has previously formed one side of a gingival pocket.

*The technique was illustrated by a colour film.

The union of these tissues, i.e., epiblastic and mesenchymal, is surprising enough, but is even more so when it is seen that the epithelium which has joined to the tooth assumes a tendency to grow towards the apex of the tooth, and this ability to "invade" the actual periodontal "region" first observed by Gottlieb is exhibited by the new gingival epithelium which heals the wound. Sufficient emphasis has not been given this observation of Stones not only because of its unique character but if the soft tissues were not "sealed" to the tooth, the final result of gingivectomy, whatever else it might accomplish, would be the creation of an exposed "unhealed" area about all the teeth involved in the operation, and would allow constant seepage of exudate into the mouth and infection to enter. The rootwise growth of the epithelium may be a natural attempt to maintain the "seal" between the tooth and the supporting tissues until actual exfoliation, and this epithelial downgrowth should be regarded as a defensive mechanism and not a destructive one.

Dental Infection and Mouth Disorders.

Some reference must be made to the relation of mouth sepsis to remote disorders. Hunter[4] was the first to suggest a possible relationship between what he called oral sepsis and the general health, and his views were strongly supported by Wilcox.[5]

There are two approaches to the problem of oral sepsis and its effects; the dental and the medical. It should be pointed out that within recent years there has been a considerable change on the dental side.

It was formerly customary, in discussing the subject, to consider dental sepsis as being of two types: (1) the closed focus represented by a septic process at the root apex, and (2) the open type of which pyorrhoea gingivae was a typical example.

The closed type of focus was at one time a prominent feature of every dental X-ray survey and, for the most part, it was due to the unsuccessful efforts of the dental surgeon when dealing with the non-vital tooth. The imperfectly treated root with its well known "area" has to a large extent disappeared, and is now the main contributory, so much so that the terms "oral sepsis" and "paradontal disease" are now practically interchangeable. It is observed continually that the elimination of mouth sepsis is followed by a marked improvement in the general health. The patient soon begins to put on weight and will often report a sense of well-being which has been absent for many years. Such constant results cannot be lightly brushed aside.

There is plenty of evidence to show that even in the case of rheumatoid arthritis, where the onset has been rapid, a marked improvement may follow the removal of a source of sepsis and the outlook is even more hopeful in the case of a true fibrositis or perineuritis. Kersley[6] has stated, "infection acts like the trigger on a machine gun"; he continues: "sometimes the trigger gets stuck down after the pressure of the finger is removed, sometimes another finger, e.g., a food, trauma (physical allergy) or a shock will again depress the trigger, or perhaps has been the offending finger all the time." He further says, "that we may look upon dental sepsis as the occasional trigger in firing off some biochemical mechanism we do not yet understand—alternatively, gross sepsis may help to sensitise the mechanism to pull off the other triggers." Kersley regards rheumatism as "an altered reaction of the macro-organism to the invasion of a foreign protein."

Obviously aware of the views of those who are inclined to minimise the role of mouth infection in rheumatism, Kersley said that, even if only 7% or 8% can be shown to be so related and in spite of disappointments following dental treatment, there will be a few brilliant successes; enough to make the careful consideration of dental treatment most important.

As far as the dental practitioner is concerned, experience constantly confirms the belief that mouth sepsis—its mechanism understood or not—in some way lowers the general resistance to disease and may be responsible for that varied response which depends on factors peculiar to the individual.

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REFERENCES.

1. Martin, D. J.—Personal communication.
2. Fish, E. W.—Problems of paradontal disease: Brit. Dent.J., 88:142, 1950.
3. Stones, H. H.—Oral and Dental Diseases, Edinburgh, E. & S. Livingstone, 1948.
4. Hunter, W.—Interests of dental science and their studies: their importance in relation to health: Brit.Dent.J., 50:1225-33, 1929.
5. Wilcox, W.—Dental sepsis—a retrospect: Proc.R.Soc. Med., Part II, Section of Odontology, 23:1179, 1929-30.
6. Kersley, G. D.—Dental sepsis and chronic rheumatism: Proc.R.Soc.Med., Section of Odontology, 42:151, 1948-49.

Maxillary Conduction Anaesthesia*

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It is commonly thought that Maxillary Conduction Anaesthesia is a difficult and intricate procedure, whilst at the same time it is now almost universally accepted that Mandibular Conduction Anaesthesia is a most efficient and simple means of anaesthetising the mandible.

Those who employ the technique do not regard it as a difficult or dangerous injection. Why then is it that so many regard a maxillary block injection beyond them or out of their field? Perhaps the awe surrounding the maxillary injection may be paralleled to the awe in which some of the general public still regard a visit to the dental surgery, and equally unwarranted.

The maxillary block injection is a simple means, just as simple as the mandibular block, to gain anaesthesia of the maxilla, from the third molar region to the bicuspid region, with but one puncture point.

As with any branch of local anaesthesia, to master the technique for maxillary block injections it is necessary to be quite familiar with the anatomy of the region concerned, so I will briefly and as concisely as possible deal with the most relevant areas and structures of this region.

Pterygo-palatine Fossa.

The upper part of the pterygo-palatine fossa is the region where the anaesthetic solution is to be deposited: there the maxillary nerve trunk first makes its appearance after emerging from the foramen rotundum. The course of the nerve trunk will be more fully described later.

The pterygo-palatine fossa is in reality one fossa within another — the infra-temporal fossa, which is an open space directly behind the maxilla so that the rounded posterior surface of the maxilla forms the anterior wall of the fossa. Two or three small foramina, the dental canals, are seen on the posterior surface of the maxilla. The roof of the fossa is flat, formed by the infra-temporal surface of the greater wing of the sphenoid bone.

The medial wall of the fossa is mainly the lateral pterygoid plate.

Between the upper part of the anterior wall of the fossa, i.e., the posterior wall of the maxilla, and the anterior border of the lateral pterygoid plate there is a narrow V-shaped opening: the pterygo-maxillary fissure. A needle passed through this fissure enters the pterygo-palatine fossa. The fissure lies vertically between the sphenoid bone and the maxilla and is directed downwards and outwards. It is closed inferiorly by the approximation of the lateral pterygoid plate and the maxilla.

The lateral wall is formed by the ramus and coronoid process of the mandible. Thus, the pterygo-palatine fossa is found immediately beyond the pterygo-maxillary fissure. The main openings which lead into and out of the pterygo-palatine fossa are:

1. Foramen rotundum, from which the maxillary nerve trunk emerges.
2. Pterygo-maxillary fissure, through which the needle must pass to enter the fossa.
3. Inferior-orbital fissure which leads directly into the orbit. A needle advanced too far will pass through this fissure into the orbit.

Within the pterygo-palatine fossa and of interest here are:

1. The maxillary nerve.
2. The spheno-palatine ganglion along with its branches, together with the third part of the maxillary artery.

Before leaving bony structures, it is necessary to refer to one other, the glabella. With the maxillary injection it must be remembered that the solution is deposited deep within the tissues so that, as well as a thorough knowledge of the anatomy of this area, superficial landmarks are a great help.

The small area above the junction of the two nasal bones with the frontal bone is called the glabella. For the needle to pass from the infra-temporal fossa to the pterygo-palatine fossa it must be directed towards the medial sagittal plane of the head.

From antero-posterior radiographs it has been ascertained that a point on the buccal side of the maxillary tuberosity, the foramen rotundum, and the glabella lie in the same plane; hence the importance of the glabella.

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The only muscles of interest are: (1) the buccinator, which is pierced with the initial puncture; (2) the lateral and medial pterygoid muscles, both of which are to be avoided, and to which I will refer later.

Maxillary Nerve.

The maxillary or second division of the trigeminal nerve enters the pterygo-palatine fossa after emerging from the middle cranial fossa via the foramen rotundum, passes across the fossa to enter the orbit through the inferior-orbital fissure, travels along the infra-orbital canal cum groove to emerge on the face through the infra-orbital foramen as the infra-orbital nerve. There the infra-orbital nerve breaks up into three terminal branches:

(1) Palpebral, for the skin and conjunctiva of the lower eyelid.

(2) Nasal, for skin and fascia of the side of the nose.

(3) Labial, for the cheek and upper lip.

Before the maxillary nerve enters the orbit the posterior-superior dental nerve or nerves are given off, descend through the pterygo-maxillary fissure to enter the foramina on the posterior surface of the maxilla so as to supply the upper molar teeth and gingival tissues.

Within the infra-orbital canal cum groove two other branches are given off, viz. (1) the middle superior dental nerve, to supply the premolar teeth, (2) the anterior-superior dental nerve, to supply the canine and anterior teeth. Both nerves in their course down the maxillary antrum send off small twigs to supply the sinus.

Thus, the outer nerve loop is formed.

When the maxillary nerve lies high in the pterygo-palatine fossa there is suspended from the nerve trunk, by two short branches, the spheno-palatine ganglion. Branches from the ganglion are: (1) pharyngeal—supplies the membrane of the roof of the pharynx and sphenoidal sinus; (2) greater palatine nerve—travels down through the palatine canal and emerges on the hard palate through the greater palatine foramen to supply the soft palate and muco-periosteum of the hard palate; (3) long spheno-palatine nerve—passes through to the anterior palatine foramen to supply the anterior part of the hard palate.

These three branches form the inner nerve loop.

Thus, there exists an outer and an inner nerve loop which, if both anaesthetised, give perfect anaesthesia of the maxilla as far forward as the bicuspid region.

Remember that, if the maxillary block is given correctly, it is not necessary to give any supplementary injection of the palate if it is not intended to work further forward than the bicuspid teeth.

Once these facts are understood the technique of the injection itself is as simple as a mandibular injection.

Maxillary Block Technique.

The instrumentarium for the injection is as follows:

1. Glass "Luer-Lok" syringe of 4 ml. capacity.
2. Angular attachment of approximately 100°.
3. 42 mm. needle, 25 gauge.

The aim is to pass the needle to the pterygo-palatine fossa and deposit the anaesthetic solution high in this fossa, to anaesthetise the inner and outer nerve loops.

Seat the patient in a semi-supine position and pay strict attention to the drying of the oral tissues and fixing of the bacteria with antiseptic solution.

Stand in front of the patient so that is possible to line your needle with the glabella; if you stand behind your patient this cannot be done.

Request the patient to open the mouth, but not too widely, as when opened to its fullest extent the buccinator is stretched and presses against the teeth and gingivae.

The puncture point of the needle is at the muco-buccal fold above the apex of the mesio-buccal root of the maxillary third molar. Advance the needle through the thin buccinator muscle for a distance of approximately 5 mm. At this stage the barrel of the syringe is held across the patient's face to facilitate the entry of the needle. Once the buccinator is pierced, the syringe may be changed from this position to a position where the curve of Spee and the hub of the syringe is well out in the buccal tissues.

Then advance the needle through the pterygo-maxillary fissure, keeping it in close contact with the posterior surface of the maxilla and in line with the glabella, to a depth of 30-35 mm. and here deposit 4-6 ml. of anaesthetic solution.

In order to anaesthetise the premaxilla other injections are necessary.

Should the needle pass in a lateral or distal direction it is most likely to strike the lateral pterygoid plate or the infra-temporal surface of the great wing of the sphenoid bone, and will fail to pass through the pterygo-maxillary fissures.

Regions anaesthetised by this injection are: (1) upper lip, (2) side of the nose, (3) lower eye-lid, (4) hard and soft palate, (5) teeth and supporting structure as far forward as the first or second bicuspid.

As with any type of injection in local anaesthesia there is a possiblity of minor complications and, if the usual precautions are not observed, and only then, major complications.

The most common minor complication is the development of a haematoma on the side of the face injected. This is caused by an extravasation of blood into the tissue, following the puncture of a blood vessel. Go back to the brief remarks on the medial lateral pterygoid muscles: surrounding these muscles is the pterygoid plexus of veins. Should the needle pass too far in a posterior or lateral direction it is likely to involve the lateral or medial pterygoid muscles and the pterygoid plexus of veins, with a resultant haematoma.

Treatment for a haematoma is to apply immediate pressure externally to the side of the face and to apply an ice pack to the side affected.

At the same time, if the muscles are involved, muscular trismus may result.

The second most frequent involvement is the contents of the orbit. As already stated, a needle passed through the pterygo-maxillary fissure into the pterygo-palatine fossa and advanced too far will pass through the inferior-orbital fissure into the orbit. Should the anaesthetic solution be deposited here it could involve:

(1) The lateral rectus muscle of the eye, by affecting the abducent nerve. If this happens, the patient will be unable to move the eye in a lateral direction.

(2) The sphincter muscle of the iris, by affecting the inferior division of the oculomotor nerve, causing a dilation of the pupil of the eye.

Both conditions are transitory, passing off as the anaesthetic solution is carried away.

Major complications may be summed up as broken needles—avoid them by observing the usual safety rules: particularly do not at any time bury the needle to the hub; always leave sufficient protruding from the tissue to grasp and withdraw.

In short, maxillary conduction anaesthesia is simple, efficient, and does not involve any insurmountable obstacles in its execution.

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Simplifying the Construction of the Porcelain Veneer Crown*

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Ceramics as applied to dentistry, as in industry and the arts, has passed through many transitional stages. These stages have often tended towards improvement. It is this initiative of man, this striving for improvement, his creative instinct, and his ability to criticize and to accept criticism, that has been one of his greatest assets.

Galileo said that "observation and experience" are necessary so that man may be able to express himself. In addition, man must have the desire to correlate his observation and experience in order to advance his knowledge.

If we visualize in retrospect the changes that have taken place since the introduction of ceramics in the field of dentistry, it is surprising to see the immense improvement in so short a time. When Fauchard first introduced porcelain teeth, they were accepted as a great innovation. They were much better than anything used previously and they appeared as natural human teeth to the dentists of that period although to our more experienced eyes, they lack proper colour distribution and anatomy.

The utmost credit should be given to Dr. Fauchard for his invention. But in this paper I want to give credit to the creative instinct, which is not satisfied with a new invention,

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but constantly tries to improve upon it. It is to this creative instinct in the men following Fauchard, that we owe the beauty of the porcelain teeth of today. These teeth now meet the exacting requirements of aesthetics and harmonize with the characteristics of each individual.

Many men deserve recognition for their untiring efforts in the scientific advancement of porcelain and its use. To mention a few, they are Fauchard, White, Land, Spauldin, La Grue, Vehe, Argue, Bryan, Clark, Felcher, Avery, Brock, House and Thompson.

Shortly after the introduction of porcelain dentists began to realize that it could be used for other purposes in the mouth as well as for dentures. More progressive men discovered its use for individual crowns with metal backing. The possibility of making a porcelain crown became a reality through the use of a platinum matrix. This greatly stimulated the use of porcelain in dentistry.

The growing use of porcelain in individual restorations increased a knowledge of anatomy, colour, and colour distribution. Here again "observation and experience" made men realize that porcelain teeth used in dental prosthesis could be made comparable to single restorations.

It may be apropos to mention a few of the improvements that make it possible for us to meet some of the exacting requirements of the aesthetic qualities of porcelain work. These are the making of various fusing porcelains, improvements in their quality, the use of stains, and the introduction of translucent porcelain. With the exception of the translucent porcelain, these fusing porcelains come in a variety of hues and shades so that they may be combined to meet any individual requirement. Also we have a variety of stains which are opaque and can be used as modifiers for the porcelain and for the reproduction of any abnormality that may exist in the teeth. With the knowledge of handling these materials and the other fundamental principles required in the construction of the porcelain veneer crown, it is not the most difficult art to master.

Observation.

To master the art of dental ceramics one must be extremely observing, must acquire experience and must be diligent in every detail. It is impossible to master this fine art without some failure and disappointments. These difficulties must be and will be overcome if the individual exerts sufficient perseverance. Again there is emphasized the importance of observation, experience, and perseverance, which are the means to success. Let us consider these three fundamental principles individually and evaluate their importance as related to dental ceramics.

Too many look at teeth as a regular routine in practice. Too few take sufficient time to analyze each individual tooth so as to have a mental picture which could be discussed in detail after the patient has left the office. What educational value has observation? It trains one to observe the relations of typal forms of teeth and their harmony to the individual. It may be found from studies that there is a slight variation in the typal form in the same mouth but still there is definite harmony. But if one alters this slight variation, he will change the character of expression and harmony will be lacking.

Observation of surface texture and what effect it has on light reflections, not only in one but in various positions, is of extreme importance. It must be noted that diffused reflection of light differs in tooth structure from that of porcelain. The dispersion of light from a natural tooth is determined by the position of the enamel rods to the source of light. This is not true with porcelain, because the small amount of crystalline structure is not located positionally as in enamel, therefore we must develop the surface texture of the porcelain to simulate as closely as possible that of the tooth.

The anatomical form of the tooth also has an effect on light dispersion. This should be obvious to the close observer; but those that have paid only slight attention to this subject will be surprised to know how important an effect anatomy has on the reflection of light on the tooth. Just visualize the difference of the reflection of an object that has more or less acute angles and that which has obtuse angles. This is then analogous to that of an extremely tapering tooth and that of an ovoid type. The reflection of light will differ in each, according to its relation to the source of light.

The effect of light reflection also affects the optical illusion of dimension. Again, if the angles of an object are more acute than that of another of equal width, the one with the more acute angles appears wider. The anatomical form of the tooth also plays an important part in the colour of the tooth. Colour varies proportionately to the thickness of the tooth. The thicker the tooth labio-lingually, the more saturated is the hue; this is especially important at the incisal edge when constructing the porcelain restoration. Also the colour distribution varies according to the typal form. We all know that the anatomical outline of the

tooth is determined by the enamel. Therefore, in the more exaggerated type enamel predominates, and the enamel shade of this type has a greater predomination than that of the square or less exaggerated. It is obvious, therefore, that anatomy not only is an influencing factor in individual characteristics, but also has extremely influential effect on light reflection. This apparently is true of the difference in texture of the surface of the tooth. When a tooth has an irregular surface it appears more brilliant than one having a smooth surface. This is entirely due to the diffusion or the dispersion of the different lengths of light waves. When the surfaces are devoid of these irregularities they lack this brilliancy and appear dull. This is due entirely to the elimination of highlights which is caused by irregularity of the surface. Therefore, if these irregularities are not reproduced on the surface, the crown will appear a darker hue.

Experience.

It is not only important that one observe the conditions that exist in the mouth, but he must interpret his observations into the construction of the porcelain crown to reproduce the exact likeness. In this way he will have harmony existing when the porcelain crown is completed. The experience in reproducing what one observes enhances his desire to make a better reproduction. In this way he will scrutinize the various conditions that exist in different mouths. The wider the experience, the more perfect will be the reproductions. By correlating observation and experience, one will enhance his ability for practical application and make it possible to give better service to his patients.

Colour Selection.

This then brings us into the subject of colour selection. From the above discussion it is obvious that in selecting the colour of the teeth we must have a shade guide; one which is devoid of irregularities and one in which the surface is irregular, but both glazed at the same temperature. The thickness of the colour guide should be approximately the thickness of the crown to be constructed.

Environment plays an extremely important part in colour selection. Environmental factors that influence colour selection are: the relation of the lip, in both smiling and rest position; the position of the teeth in the arch, whether some surfaces are exposed to the source of light more than others; the position of shadows cast; consideration of the surface textures and the effect of stains and fillings, not to mention the most important, anatomy. One other factor may be considered, and that is the colour of the gums and lip. This last is only an influential factor relative to the individual's selecting the colour. If the individual selecting the colour devotes too great a time, without intervals of rest, and the eyes become overworked, we have what is termed visual fatigue. The fact that the field which surrounds the teeth is in the red end of the spectrum, such as the lips and gums, green (which is the complementary colour of red) will be seen in the tooth, if visual fatigue is not avoided. Therefore, the individual selecting the colour should rest his eyes periodically to avoid fatigue.

There are two means by which colour may be selected, one a colour guide which is made by the operator from the porcelain that is to be used for the construction of the restoration; and the other is the use of the manufacturer's shade guide or tooth guide. It matters not which is used, providing an accurate interpretation can be made, and this involves experience.

Colour distribution is of equal importance to that of colour selection. If incorrect colour distribution is interpreted, the restoration will not harmonize with the adjacent teeth. Distribution of colour is determined to great extent by the typal form of the tooth. It is obvious from the foregoing discussion that observation and experience is essential in accurately determining the colour selection and its distribution.

Condensation.

There are various schools of thought as to the method of condensing porcelain for a restoration. These may be enumerated as the spatulating method, whipping method, gravitation method, and vibrating method with or without a confining matrix. Each method is claimed to obtain accurate results. There is no question that in the hands of an experienced individual satisfactory results can be accomplished by any one of these methods. Some men use the combination of two or more of these methods and obtain satisfactory results. The writer personally favours the vibration in a confining matrix for various reasons. These can be found in previous papers published by the author and discussed by others.

The other problem that may be mentioned again which has two schools of thought is, on the one hand, that of the condensing and application of both the gingival and incisal colour previous to the first firing, and on the other, that of the condensing of the gingival or dentine colour carving it to contour and then firing it before the addition of the incisal or enamel colour. The latter is preferable

because the control of the colour distribution is more accurate than in the former. Also, if staining is necessary a more definite and greater accuracy of positioning of the stain can be procured. Whether one wishes to use the same fusing porcelain in the entire restoration, or to use the higher for the dentine body and a lower for the enamel body is entirely an individual problem.

Various methods employed in the condensation of porcelain have been discussed, but it is the author's desire to present still another and one which is now in the field of dental ceramics. It does fall within that classification of vibration within a confining matrix, yet differing from any other heretofore considered. It is not to be implied that this is a new invention, but so far as is known it is the first time the application of a mould for the vibration of porcelain in the construction of a dental restoration has been used.

The Mould.

In industry, ceramic art, and the construction of porcelain teeth this method has been employed to some extent. The method of casting or vibrating a material into a mould is not a new one, but the application of this method to individual crowns has not been used before. The greater part of this procedure differs so extensively from any other method that not to discuss it in detail would be an evasion. In the technique of this method the use of the working model has been eliminated. The reason will be obvious in the description of the technique.

If, previous to its construction, it were possible for patient and dentist to visualize how the crown would appear, one could eliminate many of the difficulties that confront him. If this were possible, one could determine more accurately and with less difficulty the exact requirement of the individual restoration. In other words, he would be producing a model, setting it in its exact position and environment. Then, the changes necessary to meet the aesthetic requirements essential for harmony could be made. This is the method by which the true scientist analyzes each problem. He segregates it into individual parts, determines the function of each, and then assembles them into a functioning unit, thus assuring thorough understanding of the reasons why the completed unit or problem will function. For example, in the construction of a bridge or a building, a rough draft is made first. After this rough draft is analyzed and tested, a complete set of blueprints is made with most exacting descriptions and specifications which must be followed in the construction. How much attention do dentists give to analyzing their problems and to planning treatment? Probably it is too little and one of the reasons is that they depend on the working model to give an idea of what shall be done, or they put all the responsibility on the dental technician. The making of a crown on a working model is not similar in any respect to that of the environment in which that restoration is to be placed. How many times have completed restorations been found not to fit exactly in the same position in the mouth as that on the working model? What was wrong? In most cases the die was not seated accurately in the impression, the result being that the finished restoration was either too long in the labial or lingual version. Then grinding was necessitated in some places and additions in others. In this way all efforts for aesthetic perfection have been destroyed. Mistakes and repeated failures force the development of ways to avoid them; in other words, experience teaches good lessons.

This method permits one to visualize the appearance of the completed restoration. It gives him an opportunity to obtain an accurate anatomical restoration and one that will harmonize with the adjacent teeth in its environment. It also eliminates complaint by the patient that the restoration is not exactly like his tooth or teeth. This is definitely true when two or more restorations are necessary. It gives the dentist an opportunity to show the fallacy, in some cases, of having the alignment of teeth altered by restorations rather than orthodontic treatment.

After a critical analysis of the tooth and its environment and a definite plan of treatment, of course the first procedure should be X-rays and study models. Also a labial model of the anterior teeth in centric relation is an excellent guide for both relation of spacing teeth and surface anatomy. Photographs will help immensely in reproducing the highlights and surface anatomy. It is advisable in some cases to take duplicate study models, make a preparation on one, then construct the restoration or restorations in wax. This is especially true where two or more crowns are to be made, and it will provide a more definite idea as to how the preparation should be made.

The preparation itself will not be considered here but, being completed, an accurate impression is taken. The results of the case will depend on the preparation and the accuracy of the impression.

The die should be made of amalgam or by copper deposition. On this die a tin foil (.003) matrix is burnished. This gives rigidity to

the model and prevents distortion in placing and removing the model on to and from the preparation.

The model is constructed of either compound or hard wax or a combination of the two. The use of compound and a wax with a yellowish grey texture is most satisfactory. A hard wax with the same texture does well. The reason for this is that the compounds are too dark in colour and do not give the highlight, so that the anatomical form cannot be determined as accurately as on wax. Also, the application of wax is much easier than that of compound. The wax that is used in the enameltone technique is the best. If a slightly harder wax were made it would be still more satisfactory.

This compound, or wax, or combination of the two is moulded over the tin foil matrix on the die. This is carved to approximate size and then placed on the preparation in the mouth. Wax is added to complete the anatomical contour of the model. Occlusion is obtained and any variation of surface texture is noted. It is not the intention of the model to give the surface texture of the tooth in the reproduction. This must be done by hand-carving in the condensed porcelain.

When the model is completed, reproducing in minute detail every anatomical characteristic of the tooth, it should possess a definite relation to the adjacent and opposing teeth, and should harmonize with its environment. After the wax crown has been completed, a slight addition on the incisal edge is made. This is to allow for increase in length to permit a slight amount of grinding after the restoration is cemented into place to simulate wear like that which exists on the adjacent teeth. The reason for this is that, on glazing, all surfaces round slightly and grinding is necessary especially on the incisal edge.

The model is then removed from the preparation and placed on the die. Tin foil, .003, is burnished over the model to a line just below the shoulder of the preparation on the die. The reason for burnishing tin foil over the model is to increase the size of the mould to compensate for contraction of the porcelain during firing. The reason for carrying it below the shoulder on the die is to permit space for seating the platinum matrix when the die is placed in position in the mould.

A slot or groove is made in the die for a seat for positioning in the mould. Into this mould porcelain is to be condensed. Select a piece of metal with its sides bent at a 45° angle for the forms of the mould. The metal forms to which the diatoric teeth are attached make an excellent form. Cut these to about four or six millimetres greater in length than the die plus the model. Three of these will be required; one for the lingual section, and one each for the mesial and distal sections. This will form a three sectional mould. Separate these forms so that the material used for the mould will adhere to them.

Place some hydrocal or stone on the one to be used for the lingual section. The bulk of hydrocal should be about ¼in. to ¾in. from the base of the form. The model and the die are placed in the hydrocal to the depth of about three-quarters of the thickness of the die and the lingual surface extending downward. After the hydrocal has begun to set, trim, so that it tapers off from the die and model to the metal form. At least one-half of the die should be exposed. Trim to sufficient depth on the mesial and distal surface of the model so as to preclude a concavity in the lingual section of the mould. The hydrocal should be trimmed lingually to approximately two millimetres from the lingual marginal ridge. The reason for this is to facilitate the removal of the condensed porcelain from the lingual section of the mould. After the hydrocal has set, this section is smoothed and should be devoid of any under cut especially toward its lateral surface. Separating medium is applied permitting the removal of the other sections.

At this time a vent should be prepared in which to pour the porcelain and through which to remove the excess water. This is made by applying wax on the centre of the incisal edge and middle part of the labial surface of the mould, then connecting these two with a string of wax and extending on over the incisal edge on to the lingual section. The entire wax string or ridge should be about 2 mm. in width and thickness, and about 4 mm. in length.

Hydrocal is placed in one of the other forms and in proper position on either of the sides, being careful that the lateral and lingual metal forms contact each other. The hydrocal should extend over and on the labial surface of both the die and the model, slightly more than half of its width. After the hydrocal has begun to set, it is trimmed to the centre of the die and model. This is then smoothed and a separating medium is applied. The other section of the mould is made the same way as the first lateral section.

When the hydrocal has thoroughly set, separate each section and remove the die and model. The model is removed from the die and the die is replaced in the lingual section

of the mould, and the lateral sections are assembled. Through the vent one can see the exact amount of space between the die and the mould, which shows the thickness of porcelain in the finished case.

Burnishing the Matrix.

Care must be exercised in burnishing the matrix because the seams must not allow any possibility of porcelain being vibrated into the crevices which would make it difficult to remove after the completion of the crown. This is always true in vibration in a confining matrix.

A piece of platinum of proper length that will circumscribe the die should be cut. Its width should be approximately 3 mm. greater than the distance from the incisal edge to the shoulder of the die. One mm. should be allowed to overlap at the incisal edge and 2 mm. beyond the shoulder. The platinum is placed around the die, permitting the two ends to join on either the mesial or the distal surface. The seam, therefore, will always be on one or the other of these two surfaces and on these surfaces will be the greater bulk of porcelain. The two ends of the platinum are then pinched together with number 122 flat beak pliers. The platinum is then removed from the die and a small piece of pure gold, 36 gauge, is placed in the seam, and heated with a blowtorch. The platinum is again placed on the die and the excess on the mesial or distal surface should be trimmed to about ½ mm. from the joint. The excess is then folded towards the lingual surface, and the platinum is burnished to place. Always start from the incisal edge and burnish toward the shoulder. This prevents tearing the platinum at the shoulder. A slit is made at the incisal edge opposite the seam. The lingual flap is burnished toward the labial surface and the labial flap toward the lingual surface. The platinum is then removed from the die and heated to a white heat. This permits the pure gold to flow throughout the entire seam, sealing it so that no porcelain can get in the crevices during condensation. The apron of the matrix should be of uniform width and should follow the peripheral outline of the shoulder. The matrix is then placed on the die and burnishing is completed. Shellac should be placed over the shoulder so that the porcelain is permitted to separate from the platinum during the firing.

Pouring the Porcelain.

The mould may now be prepared for pouring the porcelain. That portion of the mould which will form the contour of the crown, or in which the porcelain is poured, must be protected by some medium which prevents the absorption of water from the porcelain and to prevent the porcelain adhering to the surfaces of the mould. Several types of media have been tried but the one that has given the best results is tin foil. Therefore, tin foil of .0005 in. thickness cut in small pieces is burnished over the three sections of the mould. It is only necessary to burnish tin foil over that portion of the mould that will form the outline of the crown.

The die with the platinum in position is then put in the lingual section of the mould. Then the other sections are assembled in their proper place. The mould is then placed and locked in a vice on the vibration instrument. The vibrator is one that can be purchased at any drug store and the vice can be made so that it screws into the vibrator.

Preparation of the Porcelain.

The colours to be used for the dentine colours are thoroughly mixed together. Whether one should permit the mixed batch to soak in water previous to its use may be a debatable question at this time. But one thing is certain and that is the batch should be thoroughly saturated so that each particle of porcelain absorbs its maximum amount of water so that better plasticity is obtained. Increased plasticity improves not only the working qualities of the porcelain but also its firing. Porcelain should be ground in a small agate mortar in water previous to its use. This increases its plasticity and working qualities and also gives a more natural texture in the finished result.

For the dentine colour the high fusing porcelain is preferable. The mix of the porcelain should be of a creamy consistency. This permits a uniform flow of porcelain into the mould. A small portion of the porcelain is placed in the vent and with a light vibration is carried to the floor of the mould. Then addition of small portions of porcelain is continued while vibrating until the mould has been filled. Before any moisture is removed vibration should be continued for at least fifteen minutes. The excess water is then removed by means of some absorbent material. Vibrate before and after each addition of porcelain. Then, add more porcelain and vibrate. This is continued until no more moisture comes to the surface. The time that should be allotted for this procedure is about half an hour. If the water is eliminated too rapidly by the vibration, the porcelain at the base of the mould will not be thoroughly condensed and will have a flaky consistency, the reason being that the too rapid removal

of moisture makes the upper part of the porcelain so dense that it will not permit the water from the lower portion to find its way to the surface.

After the porcelain is thoroughly condensed the two latter sections of the mould are carefully removed. To remove the condensed porcelain and die from the lingual section, the ends of the tin foil are lifted away from the mould. The die, with the condensed porcelain and tin foil, is removed from the mould intact. The tin foil is then removed from the condensed porcelain. If an attempt is made to remove the condensed porcelain and die from the mould, invariably the lingual part of the condensed porcelain will break away.

The excess porcelain on the labial surface, formed by the vent, is trimmed away. We have then made the contour of the condensed porcelain exactly as that of the model that we made plus .003 in. to compensate for the contraction during firing. We now trim the condensed porcelain to the outline of the dentine colour as shown on our colour chart. This is to obtain the proper colour distribution.

The porcelain is then placed in the preheated muffle and fired to the temperature for vitrification. This temperature is about 100° F. below that of glazing. At this temperature, full shrinkage is complete and the surface has a semi-glazed appearance. After removing from the muffle, it will be found that the porcelain at the gingival has shrunk away from the platinum approximately ½ mm. The fired porcelain is replaced on the die and the shoulder of the platinum reburnished.

If stains are to be used the mixing should be placed at this time in preparation for their application. They should then be applied to their position on the previously moistened vitrified porcelain. The space between the matrix and porcelain should be filled, condensed, placed in the muffle, and fired to the same temperature.

After removal of the fired porcelain from the muffle it is placed back on the die. A piece of tin foil .0005 in. is burnished on the lingual section of the model, to take the place of that originally burnished on the lingual section of the mould, which was removed at the time the condensed porcelain and die were separated.

The fired porcelain and die are placed in position in the lingual section and the other two sections of the mould are then assembled. This is placed in the vice with the vibrator.

For the contour of the crown, medium fusing porcelain is used. This technique differs from any other, in that the enamel colour of porcelain covers the entire labial, mesial and distal surfaces of the crown. If a study of the histology of a tooth be made, it will be found that the enamel forms the contour of the tooth and if the tooth is exposed to various sources of light the enamel colour is evident. Therefore, by placing the enamel colour of porcelain on the entire surface of the crown, it will more closely simulate that of the natural tooth. It is well to bear in mind, in view of the above explanation, that it is advisable when selecting the dentine colour, to select one slightly darker, or to darken it slightly when mixing your combinations.

The porcelain is then mixed to a creamy consistency, and small portions are placed in the vent and vibrated. This is continued until the mould has been completely filled. This is then vibrated for about 15 to 20 minutes before the excess water is removed. After this water is removed, more porcelain is placed in the vent and vibrated for a few minutes before the remaining water is removed. Add porcelain as required to fill the mould completely. Vibration and the removal of water should continue slowly until no more moisture appears on the surface. The mould is then removed from the vibrator and the two lateral sections are dissembled very carefully. The ends of the tin foil on the lingual section are separated from the mould and the condensed porcelain, die and tin foil are removed with great care. The tin foil is then removed from the condensed porcelain. A thin portion of the porcelain on the lingual surface may be separated from the lingual surface and be removed with the tin foil. This is of no disadvantage because no porcelain was removed from the lingual surface after the initial condensation formed in the mould. It may be necessary to add to the marginal ridge, only to make it uniform in its anatomical design. This is done after firing and when the crown is ready for the final glazing.

The excess porcelain due to the vent is now removed. The only carving necessary is that for fine detail and for the marking on the labial surface for diffused light reflection. The porcelain is placed in the muffle and the temperature is brought just to the point of glazing under a definite time control. The reason for not giving the porcelain a complete glaze is that the final and finished glaze will be procured in the next firing.

After removal of the crown from the muffle the platinum is trimmed to ½ mm. from the shoulder. The crown is ready for a try-in. It will be a trifle longer than necessary, but final adjustment will be made after cementation. If these procedures of the technique are followed in detail, no alteration or additions will be necessary. At this time you can determine the exact type of glaze that will be required to simulate that of the adjacent teeth and the firing temperature that will be required to obtain the desired results.

The porcelain is removed from the mouth and placed on the die. With a small stone the porcelain and matrix are reduced so that an accurate fit is secured. Also reduce the contact slightly to prevent too tight contact after glazing. The crown is washed thoroughly, placed in the muffle and heated to about 1500° F. to burn off any organic material adhering after grinding. A thin mix of porcelain is placed over the surface and brushed with a number 4 wash brush. The purpose of this is to fill in any pores or irregularities formed in the grinding process. The crown is then fired to the temperature determined to obtain the desired surface texture. After proper temperature has been reached the current is shut off and the muffle permitted to cool slowly to a temperature approximately 400 degrees F. or below. This is to achieve proper annealing of the porcelain. We know that porcelain properly annealed is stronger than one that is taken out at a high temperature and subjected to a rapid cooling process.

The matrix is then removed and the crown is placed on the tooth to check the margins. In placing the crown in position it will be noticed that the contacts are snug just as they should be. If the contacts had not been reduced slightly before the final firing, they would be too tight at this time. The reason for this is that porcelain expands slightly with that temperature sufficient for the proper glaze; also, due to the fact that all particles are at their maximum equilibrium, there is a slight settling of the mass. This change is not sufficient to alter the contour or in any way affect the chemical changes to take place.

The inner surface of the porcelain veneer crown should be etched with hydrofluoric acid to permit the cement to adhere and interlock into the unevenness of this surface of the porcelain.

The crown is then cemented to place. The excess cement is carefully removed just before setting is complete. No grinding of the margins is necessary if the technique is carefully followed. The gingival portion of a porcelain crown should never be touched with stone or disc after the final firing if healthy tissue is to be maintained.

It is obvious, therefore, that observation and experience are essential to success. And it is therefore true that only through experience can we appreciate the importance of observation. This pertains to the practical experience by which one reconstructs in detail that which he sees in the mouth. The wider the experience, the more critical will be the observation.

It is clear, then, that one cannot be really successful without experience. Too many lose confidence if the first attempt at reproduction is not successful. They then follow the line of least resistance and delegate the work to the laboratory.

This work can be done by the great majority of men if the method of procedure is simplified sufficiently. In dentistry as in industry and the arts, certain phases of the problem should be so designed that the less skilled can perform them, and the more complicated part be delegated to the more highly skilled.

It is with this in mind that this simplified technique in the construction of a porcelain veneer crown is submitted. First, a definite model of the reproduction can be made before constructing the crown, and the other part of the work can be done by a technician or office assistant. To be more precise, the assistant can construct the mould, condense and fire the porcelain. The time required in trimming the porcelain for colour distribution is but a few minutes. The time involved in making the model is compensated for by the results obtained. Also the wax can be moulded to contour in the environment in which it is to be placed.

By this procedure of condensation of the porcelain, uniform density can be obtained each time. This means definitely that a uniformity in firing, shrinkage, and other procedures in the construction of the porcelain veneer crown is produced in other cases.

Therefore, by simplifying the construction of the porcelain veneer crown, we not only obtain more accurate results but, by following each step accurately, the process becomes a more uniform and simple procedure.

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BIBLIOGRAPHY.

Andrews, A. I.—Ceramic Tests and Calculations, New York, John Wiley & Sons, 1928.

Argue, J. E.—The porcelain jacket crown: J.A.D.A., 26:1472-9, 1939.

Bastian, C. C.—The individual unit porcelain bridge: J.A.D.A., 29:1369-73, 1942.

Binns, C. F.—Potter's Craft, New York, Van Nostrand, 1922.

Byram, J. Q.—Principles and Practice of Filling Teeth with Porcelain, New York, Consolidated Dental Manufacturing Co., 1908.

Capon, W. A.—Porcelain Dental Restorations, Philadelphia, Lea & Febiger, 1920.

Clark, E. B.—The colour problem in dentistry: Dent. Digest, 37:499-509, 1931.

Doxtater, L. W.—Procedures in Modern Crown and Bridgework, Brooklyn, Dental Items of Interest Pub. Co., 1931.

Felcher, F. R.—The Art of Porcelain in Dentistry, St. Louis, C. V. Mosby, 1932.

Gill, J. R.—Methods and results in condensation of dental porcelain: J.A.D.A., 19:1147-54, 1932.

Gill, J. R.—Pyrochemical reactions in firing of porcelain: J.A.D.A., 18:280-90, 1931.

Gill, J. R.—Construction of the porcelain veneer crown: J.A.D.A., 27:1884-96, 1940.

Hovestad, J. F.—Practical Dental Porcelains, St. Louis, C. V. Mosby, 1924.

Le Gro, A. L.—Operative instrumentation for jacket crown preparations: Dent. Items of Interest, 51:245, 1929.

Luchiesh, M.—Colour and its Application, New York, Van Nostrand, 1921.

Luchiesh, M.—Light and Shade and their Application, New York, Van Nostrand, 1916.

National Society for the Study of Education—Philosophies of Education: Year Book No. 41, Chicago, University of Chicago Press, 1942, pt. 1.

Pilkington, E. L.—Natural effects in porcelain: J.A.D.A., 17:1270-6, 1930.

Robineau, S. E.—Grand Feu Ceramics, translated into English by T. Doat, with notes by C. F. Binns, Syracuse, Keramics Studio Pub. Co., 1905.

Searle, A. B.—Clayworkers Handbook, London, Charles Griffin & Co., 1921.

Sosman, R. B.—The Properties of Silica, New York, Chemical Catalog. Co., 1927.

Squires, W. A.—Present status of porcelain bridgework: J.A.D.A. and Dental Cosmos, 25:570-7, 1938.

Tylman, S. D.—Theory and Practice of Crown and Bridge Prosthesis, St. Louis, C. V. Mosby Co., 1940.

Vehe, W. D.—Some basic principles underlying porcelain veneer: J.A.D.A., 17:2167-76, 1930.

Williams, J. L.—The aesthetic and anatomical basis of dental prosthesis: Dent. Cosmos, 53:1-26, 1911.

Wilson, H.—Ceramics: Clay Technology, New York, McGraw-Hill, 1927.

Dental Materials

*Current Notes (No. 10)**

Dentifrices and Denture Cleansers.

Dentists are often asked, "What tooth-paste do you recommend?" It has been suggested that the best reply is, "It depends on what flavour you like." With our present knowledge of dentifrices this reply seems to be appropriate for most popular brands—but not all however.

The necessity for using a particular type of paste, powder, chemical, or nothing at all on the toothbrush has not been convincingly demonstrated. As far as caries prevention is concerned it is hopeless trying to detect any but marked differences between dentifrices for it is very difficult to conduct tests that give statistically sound and conclusive results. Most of the advertising claims for superiority cannot then be substantiated, and in any case it is doubtful whether many people are swayed by them. As most dentifrices seem pleasant enough in the mouth, it is surely the constant repetition of a trade name or catch phrase that largely determines their popularity. Judging by the large sums spent in advertising this would seem to be the case. It was recently reported in the *Journal of the American Dental Association*, that in 1950 more than five million dollars were spent on advertising dental products in the U.S. national newspapers alone. Three firms spent over half a million each, and one of these nearly two million dollars. If figures for broadcasting, television and other means of advertising were added, the total would be tremendous.

It may appear from what has been said that, apart from flavour, there is little to choose between commercial dentifrices, but this is not the whole story. There are some dentifrices which do not meet certain standards set by the American Dental Association and other authorities. Requirements for injurious materials, abrasiveness, pH value and fermentability are included in these standards so that, while it is still impossible to tell which one is best, it is simple enough to decide whether a dentifrice is acceptable or not.

Test on 33 commercial tooth-pastes, powders and solid dentifrices have been carried out at the Commonwealth Bureau of Dental Standards. Eight of these dentifrices were shown to contain abrasives capable of scratching glass, and hence tooth enamel. Five of the tooth-pastes were considered to be too alkaline and three contained fermentable sugars.

*Contribution from the Commonwealth Bureau of Dental Standards.

The samples tested do not represent all the dentifrices available in Australia, but the results indicate that some of them at least may have a detrimental effect on the oral tissues. If a dentist who has been in the practice of recommending particular dentifrices is now uncertain whether they are above criticism, he may obtain from the Bureau of Dental Standards an indication of any apparent disabilities. On the other hand, the enquirer must realise that with the present state of knowledge it is not possible to make distinctions among those products that appear to be free from defects mentioned. The choice in such instances will depend on non-clinical factors such as taste, price, and the form in which the dentifrice is supplied.

It may be of interest that, in view of the claims made by the sponsors of some toothpastes, tests were made on the bactericidal effect of the dentifrices. It was found that fifteen of the products each diluted to give a 1:24 supspension killed the selected test organism (*Staph. aureus*), eight others were effective in a 1:12 suspension and two in a 1:6 suspension. Eight dentifrices were ineffective at all of the dilutions tested. Although the clinical significance of these tests is uncertain the results indicate a wide variation in the bactericidal properties of commercial dentifrices.

Ammonium-ion dentifrices were not included in the original series of tests, but several have since been examined for physical and chemical properties. The only criticism in this regard is that nearly all of those tested contained an abrasive capable of scratching glass. The question of the effectiveness of this type of dentifrice in preventing caries must be left to the dentist to decide for himself from his own observations and from the increasing volume of literature on the subject.

Dentists are also often asked what is the best cleanser for artificial dentures. Here again opinion is divided as to whether a commercial immersion or brushing cleanser or "just soap and water" should be used. Only a negative approach to the problem has been made at the Bureau; that is, products were examined not for their cleaning efficiency but for evidence of adverse effects on dentures.

Eight immersion and six brushing cleansers were tested. The immersion cleansers, which included both the hypochlorite and peroxide types, varied considerably in composition, but none of them when used as directed had any noticeable effect on acrylic teeth or denture base material. (The antiseptic solutions containing essential oils and other organic liquids were not considered in these tests for they are known to be harmful to acrylic materials. Patients should always be warned against cleaning acrylic dentures with this type of solution.)

Two of the brushing cleansers investigated contained a considerable proportion of a gritty abrasive, which would readily scratch acrylic teeth. There is at least one instance of a patient wearing a hole in the palate of his denture by too vigorous or frequent use of one of these products. Obviously the practitioner can readily determine for himself whether a particular cleanser contains abrasive material that is liable to damage the denture, and it is suggested that a few simple tests be made before recommending any product to the patient.

Dental Health Education Department

Treatment for the Child Patient

The basis of modern dental practice is prevention and control rather than repair and correction. If we are to maintain this position, the primary dentition is our starting point.

The increasing amount of research into the cause of dental decay and the progress made in preventive dentistry have given us these fundamentals: the topical application of sodium fluoride, a correct technique and time of toothbrushing, and control of the amount and number of times refined carbohydrate is taken in the diet—all preventing or controlling the incidence of decay.

Despite these advances, the major contribution towards a healthy mouth is attention by the dentist: it is he who is the first contact with the patient.

Adequate pre-natal advice having been given to the mother, the first visit of the child is considered necessary between two and three years of age and should be an appointment free from pain and discomfort, to allow the child to acquaint himself with the surroundings. Dental inspection at this early age is necessary because it has been shown by surveys that as many as 50 per cent. of two-year-old children have one or more decayed teeth.

This appointment should be followed by periodic visits every four to six months, bite-wing X-rays and examination being necessary to see if cavities are commencing on the surfaces between the teeth.

The above routine will eliminate the problem of the child presenting in pain with abscessed teeth and allow the early placement of restorations to promote the preservation of the deciduous teeth for their full life, a period of up to ten years' duration.

At all appointments the dentist makes a careful study of growth and development of the jaws, and advocates treatment for sucking, biting and postural habits, if present. Remember always that any irregularities in the first dentition, caused by early loss or too long retention of these primary teeth, interfere with the eruption and correct alignment of the permanent dentition. Thus, from five to twelve years, the period of the "mixed dentition," the teeth require close scrutiny if normal function is to be maintained.

Diet instruction must be given, in which is pointed out the type and variety of food to be taken in order to build up the still forming teeth and provide proper mastication leading to proper growth and function, and the type of food to be eliminated from the diet, the most harmful being sugar and excessively refined foodstuffs.

The neglect of the primary teeth is a tragedy resulting in dental and facial deformities and even defective speech, quite often a psychological handicap in later life. Crowded teeth are more readily attacked by decay due to the difficulty of proper cleansing, and incipient gum diseases, with their sequelae in later life, are a result of poor oral hygiene.

Any parent realising the importance of early treatment will surely co-operate, for the health of the child and the appearance and symmetry of the face depend to a large extent on well developed jaws and a full complement of sound teeth.

The DENTAL JOURNAL of AUSTRALIA

Editorial Department

XIth International Dental Congress

International professional gatherings such as the XIth Congress are a safeguard against the narrow provincialism which can so readily arise, by which the progress made in dentistry in other countries is overshadowed by an exaggerated idea of our own achievements.

Harold W. Oppice, past President of the American Dental Association, has very ably expressed this concept of internationalism in dentistry[1].

"Dental progress is being made in all parts of the world, sometimes slowly and painfully and under real handicaps, but nevertheless there is real progress. Dentists will do well to look beyond the borders of their own country to see what progress is being made elsewhere and to adapt this knowledge to their own program. The XIth International Dental Congress, which will be held in London in 1952, will provide a splendid opportunity for many to exchange views with dentists from all parts of the world. It is my hope that many will avail themselves of this opportunity for . . . dentistry must never lose its restless desire to improve its technics for providing dental care."

The organisation and sponsoring of an International Dental Congress, which will be held in London from 19th to 26th July this year, is one of the objects of the Federation Dentaire Internationale.

In 1947 the British Dental Association invited the Bureau of the F.D.I. to organise a Congress in London in 1952. The Executive Council at its meeting in Boston accepted the invitation and an organising committee was constituted, consisting of one-third members of the F.D.I. and two-thirds members of the British Dental Association with Dr. E. Wilfred Fish as Chairman.

The formal lectures of the Congress consist of a series of twenty International Scientific Reports which will treat specifically recent advances in all branches of dental science in all countries. These reports will be published in the four issues of the *International Dental Journal* from September, 1951, to June, 1952, inclusive. The discussions arising from the reports, together with information concerning the demonstrations, films and exhibits, will be published in the succeeding issues September, 1952, to June, 1953.

A distinguished group of research and professional personnel have been selected to prepare these reports and the comprehensiveness and authenticity of the information presented is assured.

The following members of the profession have accepted invitations to present the twenty International Scientific Reports:—Dr. Henry Beynon (Sweden), Dr. Malcolm Wallace Carr (U.S.A.), Mr. John W. Gilbert (Great Britain), Dr. Louis I. Grossman (U.S.A.), Professor Robert G. Kesel (U.S.A.), Dr. Lison (Belgium), Professor A. Lundstrom (Sweden), Dr. S. A. MacGregor (Canada), Professor R. Marguerite (France), Professor E. Matthews (Great Britain), Dr. Birger Ofstad (Norway), Dr. Balint Orban (U.S.A.), Professor S. Palazzi (Italy), Dr. Shailer Peterson (U.S.A.), Professor M. A. Rushton (Great Britain), Professor Isaac Schour (U.S.A.), Dr. L. J. M. Spoorenberg (Holland), Professor J. Staz (South Africa), Dr. Alfred A. Steiger (Switzerland), Professor S. D. Tylman (U.S.A.).

In order to obtain the greatest benefit from the Congress, the F.D.I. officials have advised both those attending and those unable to attend to obtain copies of the *International Dental Journal* containing the reports and transcripts.

Subscriptions can be obtained from Cassell & Co. Ltd., 210 Queen Street, Melbourne, Victoria, at £2/17/6 per annum (4 issues), and further information can be obtained from the offices of the Association.

REFERENCE.

1. Oppice, H. W.—Dentistry and the problems of today: J.A.D.A., 43:712-7, 1951.

American Medical Association endorses Water Fluoridation

On November 12th a joint statement issued by the Council on Pharmacy and Chemistry and the Council on Foods and Nutrition of the American Medical Association gave the opinion that the use of water containing 1.0 part per million fluoride under an approved method of control is harmless. The statement is as follows:—

"The Council on Pharmacy and Chemistry and the Council on Foods and Nutrition of the American Medical Association have been requested to state their opinion regarding the safety of fluoridation of water supplies, a procedure which now has been adopted by more than 140 cities.

"The Councils are unaware of any evidence that fluoridation of community water supplies up to a concentration of one part per million would lead to structural changes in the bones or to an increase in the incidence of fractures. The only difficulty so far revealed is a possible increase in mottling of the tooth enamel. From the available evidence based on thousands of observations the incidence of mottling of the enamel in children who drink water containing fluoride up to a concentration of one part in a million is minimal and detectable only by careful dental examination. It occurs only in a small percentage of children and is so slight as not to present a problem from the point of view of appearance or strength of the teeth. Evidence of toxicity other than the effect on enamel has not been reported in communities where the water supply has several times this concentration. After considering the evidence available at this time, the Councils believe that the use of drinking water containing up to one part per million of fluoride is safe. However, the use of products which are naturally high in fluoride content, such as bone meal tablets, or of lozenges, dentifrices, or chewing gum, to which fluoride has been added, should be avoided where the drinking water has been fluoridated. In places where children are subjected to warm temperatures and consequently drink large amounts of water, a lower concentration of fluoride may be necessary to avoid mottling."[1]

It has been argued with a marked absence of supporting evidence that the continual use of water containing one part per million fluoride will result in accumulative toxicosis and serious systemic disorders. This statement by the American Medical Association should reassure opponents of this measure of caries control that under the approved method of water fluoridation no harmful effects can result.

The efficacy of the process in controlling dental caries is now established beyond all reasonable doubt, and with the further affirmation of the safety of water fluoridation "opponents of the process now will have to conceive new reasons for preventing the installation of this simple and inexpensive dental health measure"[2] and "since the dental benefits of the process are so well established authorities who refuse to adopt the measure will have difficulty in justifying their position."[2]

This editorial comment of the American Dental Association is particularly pertinent. Water fluoridation has now been approved by the following bodies representing every group of professional health workers in America, the American Dental Association, the American Association of Public Health Dentists, the United States Public Health Service, the Governing Council of the American Public Health Association and the State and Territorial Dental Health Directors, whilst in this State health authorities regard water fluoridation as an experimental procedure of doubtful value.

Dr. F. A. Bull, Director of the Division of Dental Health in the Wisconsin Department of Health, has drawn attention to the responsibility of the State Dental Society in the fluoridation programme:

"The degree of acceptance that fluoridation . . . will receive in any state will be in direct proportion to the effort expended by the State Dental Society."[3]

The first step for the Dental Society is to adopt a simple and positive policy on water fluoridation, and then to see that a similar policy is adopted by the State Department of Health.

The official approval of the Australian Dental Association, New South Wales Branch, has been given to fluoridation but the second goal, the adoption of the policy by the Health Department, is yet to be achieved. This must be the next step in the acceptance of fluoridation by the community and it is the responsibility of the profession, once having approved fluoridation, to bring into operation a method of caries control which is safe, simple, effective and economical.

REFERENCES.

1. Fluoridation of drinking water harmless (ed.): statement by American Medical Association: J.A.D.A., 43:733, 1951.

2. American Medical Association Councils report favourably on water fluoridation: J.A.D.A., 43:729, 1951.

3. State Society Officers (News of Dentistry): J.A.D.A., 43:629, 1951.

The Arrest of Haemorrhage

The obligation of the dental surgeon to control haemorrhage from dental operations arises as a necessary consequence of his right to operate in the oral cavity.

The failure of the dental surgeon to carry out an obligation which is not only moral but juridic has often times given rise to criticism by the personnel of allied professions. This failure may be due either to a lack of awareness of the responsibility involved or of the knowledge of adequate measures of haemorrhage control.

On page 44 of this issue of the Journal a paper dealing with both theoretical and practical aspects of haemostasis is published and should ensure that readers of the Journal are not unaware of the procedures of haemorrhage control.

In the opening paragraphs of his paper, Croker has clearly expressed the principles which should govern dental practice in relation to haemorrhage:

"The removal of teeth, either by forceps or the flap technique is a surgical procedure and, should haemorrhage occur, the dentist must be prepared both by way of knowledge and equipment to deal with the situation. Furthermore, if the patient is suspected of being a bleeder, tests should be made before treatment is commenced, and may be performed by the operator or by a trained pathologist. However, should bleeding occur, the treatment is the responsibility of the dentist and he should be prepared to carry out the procedures necessary to control bleeding."

News and Notes

Chair for Dental Prosthesis, University of Melbourne

The appointment of H. F. Atkinson, M.B.E., L.D.S., M.Sc., D.D.S., to the Chair of Dental Prosthesis at the University of Melbourne has been recently announced.

Dr. Atkinson received his L.D.S. diploma in 1936 and after some time in private practice was appointed Senior Demonstrator in the Dental Hospital, Manchester.

In 1947 he was awarded the degree of Master of Science (Manchester) for his thesis, "An investigation into the permeability of human enamel." In 1950 he was awarded the degree of D.D.S. (Manc.) for a thesis entitled "An investigation into the organic components of the human tooth."

Dr. Atkinson served in the Army Medical Corps during World War II and undertook considerable facio-maxillary work during this period.

We extend to him our congratulations and feel sure that he will be a worthy successor to the Chair of Dental Prosthesis so ably occupied by Professor W. J. Tuckfield.

Minister for Health speaks at Registration of Recent Graduates

The following was the address given by the Minister for Health, Mr. M. O'Sullivan, on the occasion of the ceremony of registration of graduates in dentistry at the Assembly Hall, B.M.A. House, on 7th February, 1952:—

"Mr. President, Members of the Dental Board, Ladies and Gentlemen:

It is a very great pleasure for me to be present at this most important function and to have the opportunity to say a few words to you dental graduates upon

the eve of your entering the ranks of the honourable profession of dentistry. This is a fitting reward to you all for the years of concentrated study and hard work.

You are graduates of the very fine dental school of Sydney University—a school where the standard of training is very high and a credit to the Dean of the Faculty of Dentistry and all those teachers associated with the Faculty. The Sydney degree is very well regarded throughout the English-speaking world, and I am sure you are very proud to hold that qualification.

I congratulate you all upon obtaining your degrees and your qualifying for registration in New South Wales.

The ceremony of registration is a simple one, but one which has great significance. It gives you rights and privileges, but at the same time places certain responsibilities upon you. Registration gives you the legal right to practise dentistry on the public, a right which is not extended to unregistered persons.

Why did the State Parliament give you that right? Only to ensure that the public received dental attention at the hands of persons skilled in the art of dentistry, and to protect them from the unskilled who, in the early days, undertook dental work for the public.

Thus, it may be said that the Dentists' Act was placed on the statute book to protect the public interest and not for the benefit of the dentist, and this is a fact you should all keep well in mind.

Your first duty, therefore, is to your patients to see that you give them your best service at all times. You should seek to conserve the natural teeth as long as may be possible, for I think you will agree that dentures are not always comfortable.

Your next duty is to conduct yourself and your practice in such a way as not to infringe the provisions of the Dentists' Act relating to professional conduct. If you do, you may come into conflict with the Dental Board which has great disciplinary powers over dentists who offend and may even in some circumstances deprive a dentist of his livelihood by removing his name from the Register. No doubt you have been taught the ethics of your profession during your training at the University.

It is essential that you should all become possessed of the Dentists' Act and Regulations in order that you may become familiar with its provisions.

Your next duty, I think, as professional people, is to endeavour to keep abreast of developments in the field of dentistry, so that your patients may have the benefit of new ideas. In dentistry, as in any other profession, there is always much progress and, consequently, one must continue to learn.

The profession of dentistry in New South Wales has reached a high standard and a person must be well qualified in order to be admitted to its ranks.

The Government of which I am a member has no desire to see any lowering of the standard and this could only have an adverse effect upon the people.

I may say that much pressure has been brought to bear upon the Government to open up the Dentists' Act to give dental mechanics the legal right to carry out certain dental work in direct contractual relationship with the public. So far as I am personally concerned, I am not prepared to support any such amendment, as I am convinced that it would be a retrograde step and one which would not be in the public interest and certainly unfair to people like yourselves, who have spent years in study in qualifying yourselves.

I cannot let this opportunity pass to mention that the Dental Hospital, where you received a great part of your training, is an institution of which the Government is proud. It is a hospital not only for the training of students, but also for the provision of dental attention to those who are unable to meet the cost of private attention. The Government, realising the importance of the work of the Hospital, meets the major part of the cost of running the institution and, in addition, is providing about £600,000 to meet the whole cost of extensions now being carried out.

I mention these facts to show that we are not unmindful of our obligation to ensure that adequate facilities are available not only for the practical training of dental students but also for the proper treatment of necessitous persons.

Now that your registration has been completed you will go your various ways. Some will go into private practice, and others into the State or Commonwealth service, and so on.

Wherever you may be I trust that your career may be successful not only from a financial point of view but also from the point of view of the public service you may render in your particular spheres. After all, much satisfaction is to be derived from the performance of public service.

I thank you, Dr. Baird, for giving me this opportunity to address this gathering and I thank the graduates and their friends for their attentive hearing."

The Late Dr. Frank Marshall

Frank Marshall was admitted to the degree of Bachelor of Dental Surgery within the University of Sydney in 1906. He was one of the first candidates to be admitted to the degree of Bachelor of Dental Surgery. In 1909 he obtained his doctorate at the University of Pennsylvania.

He served during the first World War as a dental officer and was awarded the C.M.G. for his services in the Dental Corps. He was part-time Lecturer in Prosthetic Dentistry for many years, holding this position from 1920 to 1944. During the last period of hostilities, he obtained leave from his duties as part-time Lecturer and served as A.D.D.S., New South Wales L. of C. from 1940 to 1944.

At the formation of the Australian Dental Association, New South Wales Branch, Dr. Marshall was appointed President, which position he held for a period of three years.

Dr. Marshall did excellent work in building up the Prosthetic Dentistry Department in the Faculty of Dentistry. He was very jealous of the standard in the subject that he controlled, and it is true that his work in this direction laid the foundation for the high standard of training obtained in the Faculty of Dentistry.

Fairfax Reading Memorial Prize

ENDOWMENT FUND OF THE DENTAL ALUMNI SOCIETY OF THE UNIVERSITY OF SYDNEY

It is desired to announce that the second award of this Prize will be made in the latter part of next year, and Alumni members are invited to exercise their privilege of nominating a candidate.

The conditions governing the Prize are as follows:

"The Prize shall be awarded for an original contribution of outstanding merit adding to the knowledge or understanding of any subject

with which dentistry is concerned, but shall not be awarded in respect of any material submitted for an academic degree.

"Any Graduate of the Faculty of Dentistry of the University of Sydney residing in the Commonwealth of Australia, or any person residing in New South Wales who, in the opinion of the Committee of Management, is associated with Dental Science shall be eligible for an award of the Prize.

"Candidates for the Prize shall be nominated by not less than three members of the Dental Alumni Society," and members are advised to be specific in their nominations, which should be supported by an indication of the grounds on which such nomination is based.

Further information may be obtained from the Secretary of the Endowment Fund, 810 Military Road, Mosman, or from the Hon. Secretary of the Dental Alumni Society, United Dental Hospital, Chalmers Street, Sydney, by whom nominations will be received up till 30th May, 1952.

Hardwick Memorial Library

The following recent books have been added to the Library for borrowing since the last list was published in November, 1950:

Benn, Roy E.—Hypnotism and mesmerism. Special dentists' course. 1950.
Black, G. V.—Operative dentistry, 4 vols. (8th ed.). 1948.
Blair, V. P. & Ivy, R. H.—Essentials of oral surgery. (4th ed.). 1951.
Bulbulian, Arthur H.—Facial prosthesis. 1945.
Bunting, R. W.—Oral hygiene and preventive dentistry. 1950.
Cipes, L. R.—Prescription writing and materia medica for dentists. 1950.
Comroe, Collins & Crane.—Internal medicine in dental practice. (3rd ed.). 1950.
Coolidge, Edgar D.—Endodontia. 1950.
Craddock, F. Winston—Prosthetic dentistry. (2nd ed.). 1951.
McGehee, True & Inskipp.—Operative dentistry. (3rd ed.). 1950.
Osborne, J.—Dental mechanics for students. 1948.
Sarnat, B. G. & Schour, I.—Oral and facial cancer. 1950.
Sears, Victor H.—Principles and technics for complete denture construction. 1949.
Stolzenberg, J.—Psychosomatics and suggestion therapy in dentistry. 1950.
Stones, H. H.—Oral and dental disease. (2nd ed.). 1951.
Thoma, Kurt H.—Oral pathology. (3rd ed.). 1950.
Tuckfield, W. J.—Full denture technique. (3rd ed.). 1948.
U.S. Public Health Service. Health of ferrous foundrymen in Illinois (booklet). 1950.
Work, Thomas S. & Work, Elizabeth.—The basis of chemotherapy. 1948.
Warrington, W. A.—Dental laboratory techniques. 1951.
1950 Year book of dentistry.

The Library is also receiving the following additional Journals which may be used for reference in the Library:

American Journal of Public Health.
Annals of Dentistry.
Dental Practitioner.
Indian Dental Review.
Informacion Dental (Spanish).
International Dental Journal.
Health (Journal of C'wealth Dept. of Health).
Journal of Ohio State Dental Association.
Journal of Prosthetic Dentistry.
New York University Journal of Dentistry.
Nutrition Abstracts and Reviews.
Revista Odontologica (Argentine).
Revista Dental Portuguesa.

Institute of Dental Surgery, University of London

A full-time Post-graduate Course of approximately six months' duration will commence on 16th June, 1952. This Course is suitable for candidates preparing for the Final F.D.S. Examination. During the first four months there will be lectures, clinical demonstrations and practical work in clinical dentistry, including Radiology. During the last two months there will be lectures and demonstrations at the Institute of Dental Surgery and at a general hospital, visits to Maxillo-facial Centres and evening lectures at the Royal College of Surgeons. The fee for the Course will be £50. A limited number of appointments as Clinical Assistant for a six months' period will be available at a salary of approximately £500 per annum. Candidates appointed will also be permitted to attend the above Course. Forms of application may be obtained from the Dean, Institute of Dental Surgery, Eastman Dental Hospital, Gray's Inn Road, London, W.C.1, to whom they should be returned not later than Monday, 21st April, 1952.

A full-time course in Orthodontics will commence on 6th October, 1952. The duration

of the course will be one year but candidates with considerable experience may apply to attend for the first six months only. The time-table has been arranged so that all lectures, both in Orthodontics and allied subjects such as Anatomy, Physiology, Speech Therapy, Genetics, etc., will take place in the first six months. Previous experience, whilst not essential, is desirable for candidates applying to take the full year's course. The fee for the course is £50 for six months and £60 for one year. Application forms may be obtained from the Dean, Institute of Dental Surgery, Eastman Dental Hospital, Gray's Inn Road, London, W.C.1, to whom they should be returned on or before 30th June, 1952.

Post-Graduate Courses in Dental Science, University of Sydney

The Post-graduate Committee in Dental Science, University of Sydney, has forwarded to members of the profession of dentistry notification of the post-graduate courses to be conducted by the University of Sydney during 1952. Further details regarding these courses may be obtained from the Secretary, Post-graduate Committee in Dental Science, Dental Hospital of Sydney, Chalmers Street, Sydney.

The following are details of the courses which will be held in May and June this year:—

Course No. 17: *General Anaesthesia, with Special Reference to Treatments in the Practice of Pedodontia.*

26th May, 1952, to 30th May, 1952; enrolment limit—14; fee £12/12/-.

The most recent advances in anaesthetic agents and techniques will be demonstrated, with special reference to their dental application. Premedication, analgesic agents, and the most satisfactory methods of using general anaesthesia in the treatment of children will be dealt with from the viewpoint of the general practitioner.

Clinicians: Dr. A. P. Balthasar and Dr. W. D. Suthers.

Course No. 20: *Periodontia.*

26th May, 1952, to 30th May, 1952; enrolment limit—10; fee £15/15/-.

A complete course in Periodontia giving the aetiology, diagnosis and treatment. The course will largely consist of practical work.

Clinicians: Dr. D. J. Martin and Mr. R. L. Currie, M.D.S.

Course No. 26: *Partial Denture Construction.*

2nd June, 1952, to 6th June, 1952; enrolment limit—12; fee £15/15/-.

The course will consist of illustrated lectures, clinical methods and technological demonstrations upon the following aspects of the subject: partial denture prosthesis as a preventive health service, the biological, physiological and pathological factors involved, diagnosis, and prognosis for partial dentures, impressions, occlusion, retention, design of plastic and metal dentures in relation to periodontal tissue, technology and the scientific use of materials suitable for partial denture construction.

Clinicians: Dr. John H. Wilson and Mr. K. P. Mackinnon, M.D.S.

Fellows in Dental Surgery

The following graduates of the University of Sydney have been successful in the recent final examinations for Fellowships in Dental Surgery of the Royal College of Surgeons, England:

Harris, G. S.; Hutchinson, G. F.; Makinson, O. F.; Reading, J. F.

Our congratulations are extended to them.

Post-Graduate Study Groups

Members are advised that the Association intends to form Post-Graduate Study Groups in various branches of dentistry of interest to the general practitioner. Further information as to membership of the Study Groups in a particular subject in which they are interested may be obtained from the Secretary of the Association.

Tufts College Dental School

The Division of Graduate and Post-graduate Studies at the Tufts College Dental School announces continuation of its course in the Airbrasive Technique. The courses in 1952 will be held in the period from 21st January to 16th August, each course taking five and a half consecutive days.

Instruction in the Airbrasive is under the direction of Dr. J. M. Gavel, assisted by Dr. Paul Vinton and Dr. Arthur Pearson. The course consists of the fundamentals of the Airbrasive Technique as it pertains to basic principles of operative dentistry with the Airbrasive. Chairside instruction and experience with patients will be stressed.

Further particulars may be obtained from the offices of the Association, 135 Macquarie Street, Sydney (BU 3045).

American Academy of Dental Medicine

The Sixth Annual Meeting of the American Academy of Dental Medicine will be held at the Mount Royal Hotel, Montreal, Canada, on Thursday, Friday and Saturday, May 29, 30 and 31, 1952.

There will be a series of lectures, registered clinics and round table discussions on dento-medical subjects. A programme of sight-seeing and entertainment will also be arranged. All members and interested dentists and physicians are cordially invited. For further information, contact the National Secretary, Dr. W. M. Greenhut, 124 East 84th Street, New York 28, N.Y.

Institute of Dental Research, United Dental Hospital of Sydney

Applications are invited from persons under the age of 35 and qualified to hold the position of RESEARCH OFFICER. A degree in dentistry is desirable but not essential. Salary is at the rate of £1,100-1,300 p.a. according to qualifications, with the right to contribute to the State Superannuation Fund. Written applications giving full details of educational, academic, professional and research qualifications and experience, and stating age, date on which duties could be taken up, and the names of two persons willing to act as referees, will be received by the undersigned until 30th April, 1952.

E. B. WALLACE,
Secretary,
United Dental Hospital of Sydney,
2 Chalmers Street, Sydney.

Commonwealth Department of Health

Applications are invited for the position of Senior Dental Officer, Northern Territory.

Salary: £1,492-£1,678 per annum. In addition a District Allowance of £150 per annum is payable if married and £125 per annum if single. Subject to the provisions of the Income Tax Assessment Act a Zone Allowance deduction of £120 per annum may be allowable.

Duties: Responsible to the Deputy Director of Health in the Northern Territory for the conduct of all dental activities in the Northern Territory, including aerial and mobile dental services, and to act as consultant when necessary.

Qualifications: Applicants must be eligible for registration as a dentist in Australia and produce evidence of sound professional knowledge and wide administrative experience.

Applications, stating age, marital status, qualifications, experience, war service (if any), to the Director-General of Health, Canberra, A.C.T.

Applications are invited for the position of Dental Officer, Darwin, Northern Territory (two positions).

Salary: £1,340-£1,430 per annum, plus a District Allowance of £150 per annum, if married, or £125 per annum if single.

Qualifications: Applicants must be eligible for registration as Dentist in Australia and produce evidence of sound professional knowledge.

Applications stating age, qualifications, experience, war service (if any) to the Director-General of Health, Canberra, A.C.T.

Vacancy for Dental Officer in Brunei Government Service

Applications are invited for position of Dental Officer in Brunei and Sarawak (pensionable). Applicants should possess qualifications registrable by the General Medical Council of Great Britain.

Salary scale ranges between 525 dollars and 900 dollars per month with appropriate cost of living allowances. First class passage provided for successful applicant and family. House and some furniture provided at moderate rental. Further details may be obtained from the Dominion Liaison Officer for Colonial Service Appointments, University of Melbourne.

Practice Wanted

Dental surgeon (L.D.S., Liverpool) contemplates settling in Sydney. Would purchase practice. Turnover must be in excess of £3,000. Please direct correspondence to this Office.

Old Orthodontic Textbooks Wanted

Member wishes to purchase the following: Kingsley, Oral Deformities. Farrar, Irregularities of the Teeth. Angle, Malocclusion of the Teeth. Please reply to the Secretary of the Association.

B.M.A.-A.D.A. Shield

The annual Doctors vs. Dentists' Cricket Match was played at Sydney Cricket Ground No. 2 on 3rd March. The match, which was being played for the first time under the sponsorship of the two Associations, resulted in a win for the Dentists by 16 runs.

Although the personnel of the teams was not quite test-match standard, a mere 528 runs were scored in 300 minutes. A feature of the day was the sportsmanship and friendship of the players and spectators, both on and off the field.

The final scores were:

Dentists: 9-272; Doctors: 256.

Jennings Shield

The 16th Annual Cricket Match between the Dental Profession and the Sydney University Undergraduates for the Jennings Shield took place on 13th December, 1951, at Woollahra Oval, and resulted in a win on the 1st innings for the profession.

Trophies were presented as follows:

Batting—J. Newman, D. Walker.

Bowling—F. Roden Smith, R. Calov.

Fielding—E. Morris, M. Spence.

The teams were captained by K. Binns (Profession) and W. Saunders (Undergraduates).

Among official representatives present were: Dr. A. G. H. Lawes, Dr. Gordon Rowell, Mr. N. E. Edney, Dr. John Baird, Mr. E. F. Hewlett, Mr. C. C. Croker, Mr. T. R. Corbett, Mr. G. Cameron, Mr. E. B. Wallace; and many of the profession, undergraduates, and members of dental manufacturing firms attended.

Sporting Roster

May 8th—

Western Suburbs Dental Group at Concord Golf Club.

July 10th—

A.D.A. Sports Day (Moxham Cup and J. V. Hall Best Trophy) at The Lakes Golf Club.

August 14th—

Flavelle Cup at The Lakes Golf Club.

September 4th—

Northern Suburbs Dental Group at Killara Golf Club.

October 3rd—

Blue Mountains Division at Leura Golf Club.

October 21st—

Eastern Suburbs Dental Group at N.S.W. Golf Club.

Association Activities

Australian Dental Association (Federal Newsletter No. 5)

The 1951 Annual Meeting was undoubtedly one of the most successful held for several years despite the length of the agenda and the amendments to the constitution discussed in committee stage. The Federal Officers would like to record their appreciation of the complete co-operation of all delegates who dealt with this prolonged agenda in a most expeditious and constructive manner.

The principal subjects dealt with may be summarised as follows:

Increase of Revenue.

The Treasurer's Report—an innovation designed to separate financial matters from the Annual Report—drew attention to the monetary difficulties imposed by the rising costs of Federal Office administration. The Treasurer, Dr. A. G. Rowell, estimated that with careful adherence to the budget submitted an additional sum of £311 would meet the requirements of the inflationary trend in the coming year. It was resolved to increase the *per capita* charge by 2/6 per member which would yield this necessary amount.

Pharmaceutical Benefits Act.

The Minister for Health, the Rt. Hon. Sir Earle Page, intimated in a letter dated 18th October, 1951, that he would give sympathetic consideration in 1952 to the proposal that registered dentists be permitted to prescribe certain drugs, particularly antibiotics. Such action involves amendment of the Act.

Repatriation Dental Service.

After a careful review of this problem and the progress made by conferences, it was fully appreciated that in submitting a new scale of fees to the Treasury it would be necessary to have supporting statistics from all State branches.

The meeting approved the principle of immediately issuing a questionnaire to branches for circulation to groups of members. It was further agreed that the Association's auditors would co-ordinate these returns in the preparation of the case for final submission to the Treasury at an early date.

Importation of Dental Materials.

On the recommendation of the Federal Exe-

cutive, State Branches were urged to advise their members that individual applications for special import licences should be submitted whenever unprocurable materials are necessary to the Import Licensing Branch of the Department of Trade and Customs.

HONOURS AND AWARDS.

After discussion the Council recorded resolutions strongly supporting the principle of the recognition of members of the profession and defining that it is equally competent for the Federal Council or any State Branch to make appropriate representations.

AUSTRALIAN SOCIETY OF ORTHODONTISTS.

Subject to duly prescribed conditions, the application by this Society for affiliation with the Association under Section 3 (i) (2) was approved.

ELECTION OF OFFICERS.

On the motion of Victoria, the retiring officers were unanimously elected for a further term of office.

Under the amended Constitution, which was adopted at the subsequent Special Meeting, the next election takes place at the Annual Meeting in 1952.

NATIONAL HEALTH AND MEDICAL RESEARCH COUNCIL.

The President indicated that, in view of his many duties, he did not wish to seek further nomination as representative of the Association on the National Health and Medical Research Council. Subsequent to the Annual Meeting the Federal Executive made enquiries. The Director-General of Health, Chairman of the Council, has now been advised that the Federal Executive recommends the nomination of Professor A. J. Arnott, Dean of the Faculty of Dentistry within the University of Sydney, as the Association's representative.

STANDARDS COMMITTEE.

The retiring members of the Standards Committee were reappointed *in toto* and appreciation was expressed for their valuable work.

EXECUTIVE SECRETARY.

At the request of the Federal Executive, the meeting fully supported the suggestion that, in order to achieve continuity of direction of the many administrative tasks, Mr. E. F. Hewlett, B.D.S., Secretary of the New South Wales State Branch, be asked to accept the appointment as Executive Secretary although this office carries no remuneration at present. Mr. Hewlett kindly acquiesced and was duly appointed.

SPECIAL MEETING.

At the conclusion of the Annual Meeting, the meeting specially convened to consider the adoption of the amendment of the Constitution was held.

In view of the fact that the last of the many desired alterations had been considered in committee, the formality of the meeting was confined to one resolution, viz.:—

"That the Constitution be amended by deleting the existing Constitution and substituting therefor the amended Constitution which is before the meeting, and a copy of which has been subscribed by the President for identification."

As President, I would like to record my gratification that this arduous problem of constitutional revision has been completed successfully this year. The growth of the Association and its activities has necessitated many changes in the Constitution which had become obsolete and cumbersome. Dr. J. M. Wark, Interstate Vice-President, deserves due recognition for his invaluable services in this task.

With best wishes for a very successful year in all branches.

J. V. HALL BEST,
Federal President,
31st December, 1951.

Australian Dental Association (New South Wales Branch)

EXTRAORDINARY GENERAL MEETING.

At an Extraordinary General Meeting of the Association held on Thursday, 20th December, 1951, certain Special and Extraordinary Resolutions relating to the amendment of the Articles of Association and By-laws of the Australian Dental Association, New South Wales Branch, which had been set out in particular and circulated to all members, were put to the meeting and carried.

EXECUTIVE REPORT.

The Executive met on 11th February, 18th February and 10th March, 1952, and wishes to report to members the following:—

Articles of Association

The amendments to the Articles of Association, which were passed at the Extraordinary General Meeting referred to above, have been placed before His Excellency the Governor and the Executive Council in accordance with the Memorandum of Association of the Association. His Excellency the Governor and the Executive Council have indicated their approval. Consequently, the Articles of Associa-

tion and the By-laws of the Association are now changed in the terms of the Resolutions of the Extraordinary General Meeting on 20th December, 1951.

Budget for the current year

Estimates of income and expenditure in relation to Association funds for the financial year ending 31st August, 1952, indicate the need for giving consideration to the possibility of increasing Association income in future years.

Far West Christmas Camp

A roster of members performed a much appreciated service for the children attending the Christmas Camp of the Far West Children's Health Scheme at Manly during January. The Executive wishes to thank those members participating in the provision of this dental attention.

Additional member of Executive

Upon the nomination of the Far North Division, Mr. H. W. W. Shand was appointed an additional member of the Executive for the current year.

Editorship of Journal

The Executive, upon the recommendation of the Journal Committee, appointed Mr. N. D. Martin, M.D.S., as Honorary Editor of the *Dental Journal of Australia* for this and the two succeeding issues.

Syllabus Committee

The Chairman of the Syllabus Committee reported on the tentative programme for the year 1952. The Executive approved this programme which is a comprehensive one embracing lectures on Operative Dentistry, Prosthetic Dentistry, Radiography, Pedodontia, Local Anaesthesia and including the presentation of an Economics symposium and a talk on Overseas Trends in Dental Treatment, together with arrangements for the Annie Praed Oration for 1952.

Post-Graduate Courses Committee

Proposals from this Committee concerning the formation of Study Groups have been considered and members are again requested to indicate their wish to join Study Groups and suggest suitable subjects.

The Executive has decided that the Association should produce a film on a dental subject this year and the Post-Graduate Courses Committee are investigating this matter.

Sports and Social Committee

On the recommendation of this Committee, the Executive decided that the Association's Annual Sports Day would be held at the Lakes Golf Club on Thursday, 10th July, 1952.

Economics and Defence Committees

The Executive considered reports from these Committees and decided on their circularisation to all members of the Association per medium of a newsletter.

Armidale First Country Convention

A certified statement of receipts and payments for the Country Divisions' First Convention held at Armidale from 20th to 24th August, 1951, has been received. The report indicates that after the receipt and payment of certain further monies an excess of income over expenditure for the Convention of £78/13/1 will remain. The Executive has decided that a Country Convention Account should be established within the Association's funds for the receipt of this surplus.

13th Australian Dental Congress, Brisbane, 1953

Upon the request of the officers of the 13th Australian Dental Congress the Executive nominated the following members as Vice-Chairmen for New South Wales for the various Sections of Congress:—

Oral Surgery and Anaesthesia—Professor A. J. Arnott; Prosthodontia—Dr. A. G. Rowell; Operative Dentistry—Mr. J. S. Lyell; Crown and Bridgework, and Ceramics—Mr. W. Alan Grainger; Periodontia—Mr. G. Morse Withycombe; Orthodontics, Pedodontia and Preventive Dentistry—Mr. R. Harris; Dental Services—Mr. J. W. Skinner; Radiography, Clinical Photography and Film Programme—Mr. R. Harris; Research—Mr. N. D. Martin; Dental Health Education and Social Dentistry—Mr. N. D. Martin; Pathology and Bacteriology—Mr. D. A. Cameron.

MEMBERSHIP

Full members

Altmann, Frederick Siegfried, B.D.Sc.; Austin, Adrian Norman, B.D.S.; Barnett, Jeffrey Bruce, B.D.S.; Boddy, Ian Arthur, B.D.S.; Boguslawski, Henryk, B.D.S.; Briffa, Arthur Joseph, B.D.S.; Clinton, David Lorimer, B.D.S.; Cohen, Donald Joseph, B.D.S.; Droulers, Dominique Maurice, B.D.S.; Durham, Geoffrey Norman, B.D.S.; Gabb, Ronald Albert, B.D.S.; Gillies, James Henry, B.D.S.; Griffiths, George Harold, B.D.S.; Hale, Kenneth Allan, B.D.S.; Heesh, John Frederick, B.D.S.; Heesh, Mark Albert, B.D.S.; Levett, John Jerome Edward, B.D.S.; Macansh, John Donald, B.D.S.; McEwan, Malcolm Alexander, B.D.S.; McWilliam, Roderick Ian, B.D.S.; Melocco, Anthony Albert, B.D.S.; Morton, Peter, B.D.S.; Polain, John George, B.D.S.; Rowlands, William Trevor, B.D.S.; Schneider, Walter Kenneth,

B.D.S.; Turner, Bryan Norman, B.D.S.; Ulrick, Milton Charles, B.D.S.; Walker, David Alfred, B.D.S.; Watson, Cyril Ross, B.D.S.; Webb, Ernest Anthony Foxton, B.D.S.; Webster, Allen Wayne, B.D.S.; Willis, John Hubert, B.D.S.

Qualified members

Chandler, C. R.; Currie, I. A. G.; Lyell, J. S.; Orr, T. J.

Restricted members

Davidson, B. Y.; Hewlett, E. F.; Horley, H. B.; Jones, J. R.; Miller, W. A.

Resignations

Benbow, P. A.; Brazier, P.; Campling, A. G.; Carroll, V. B.; Ellison, W. A.; Garrard, H. J.; Jackson, A. R.; Peifer, H. J.; Slocombe, V. S.; Weir, F. C.

Leave of absence

Barrington, K. M.; Beckett, L. S.; Donaldson, K. I.; McKenzie, R. K.; Pinn, P. R.

Deceased

Alexander, Reginald Harry; Everingham, Kenneth; Weingarth, Henry Cyril; Wilkinson, Ezric Lyle.

Student Associates

Atkinson, James Arnell; Calov, Robert; Colligan, Leslie Arthur; Crawford, John Robert; Dill-Macky, John Richard; Dunn, Adrian Arthur; Dunningham, Stephen John; Furey, Peter Michael; Hebbard, David Robert; Lee, Francis Moh Shin; Murphy, Barbara Ivy; Murray, Francis Clement; Neave, John Bevan; Phillips, Robert Edward; Savage, Charles Menzies; Spiegel, Thomas Peter; Whitehurst, Rex Trevor.

NEWCASTLE AND HUNTER RIVER DISTRICT DIVISION.

The office-bearers for 1952 in this Division are:

Chairman: Mr. R. Krauss.
Vice-Chairman: Mr. R. Bruce.
Hon. Secretary: Mr. H. Skinner.
Hon. Treasurer: Mr. D. Reynolds.
Committee: Mr. C. Reynolds, Mr. G. Solomon, Dr. J. Thomas.
Nominee as additional member of the Executive: Mr. D. Reynolds.

New Books and Publications

PROSTHETIC DENTISTRY, by F. Winston Craddock, London, 1951. *2nd edition.* Henry Kimpton. *Our copy by courtesy of the publishers.*

This is the second edition of Prosthetic Dentistry, A Clinical Outline, which was first printed in 1945. This edition has been completely revised and increased in scope.

The aim as set down in the previous edition, to restrict the subject matter to fundamental principles of clinical procedure as relative to denture prosthesis, has been adhered to.

The importance of an adequate mouth examination is fully stressed and strengthened in argument by the addition of a new chapter on the surgical preparations of the mouth. The text deals mainly with the construction of complete dentures discussing variations in impression procedure, centric occlusion and tooth placement, the latter being particularly well handled.

A short chapter traces the development of articulators and sets out some advantages and inadequacies of their use.

Partial Denture Construction is briefly discussed with reference mainly being devoted to principles of retention and design. Similarly, Immediate Denture Construction is restricted to types and their possibilities.

Throughout the text little reference is made to laboratory procedures or the detailed stages of individual techniques and the value of the book lies in its broad view on clinical procedure. The book should be of value to the dental student as an assistance to lectures and clinical experience; and to the general practitioner who wishes to acquaint himself of present day developments in this field.—C.H.G.

DENTAL LABORATORY TECHNIQUES 1951, edited by W. A. Warrington, London, 1951. The "Dental Technician" Ltd., 87 pp., 113 illus. with index. *Our copy by courtesy of the publishers.*

This book consists of a number of articles previously published in "The Dental Technician." The production has been particularly well designed, each article is excellently illustrated and set out.

The articles embrace Retainers for Partial Denture Construction, Setting Up for Complete Dentures, Soldering, Crown and Bridgework, and Dental Electro-forming and Plating.

The scope of each article is restricted specifically to stages of interest to the dental technician. The publishers are to be commended for their efforts to contribute a text to a field that has suffered from a marked lack of reference material.

It must be borne in mind, however, that the field of dental mechanics must have as its foundation scientific facts, and an effort must be made to analyse many of the accepted laboratory practices and disregard those based solely on custom.

The authors have adopted a certain looseness of expression and have at times forgotten that appliances are to be constructed to the directions and records supplied by the dentist, and hardly justify the statement that such articles are "an attempt to include at moderate length some general principles and the essentials of different methods to provide the technician with a scheme which he may modify to suit himself."

Classification of saddles and a description of types of retainers and their uses is well handled, whereas the details of construction of a one-piece casting is dealt with in a general manner.

The procedure advocated in setting up teeth for complete dentures is unsatisfactory. No standards are laid down to preserve records of occlusal plane or tooth position in relation to bite-rim contour. Procedures involved in abnormal ridge relationships appear confusing and do not stress the importance of the individual treatment required of each case on its own merits.

The treatment of peripheries of a model would not satisfy an operator who had endeavoured to produce a fully muscle-trimmed impression.

The articulation described is prepared on a plane-line articulator. Though the author has stated that locking of cusps should be avoided, no explanation is given as to how this should be done.

One might query the procedure of arranging teeth in a retrusive ridge relationship, the cuspid in the first bicuspid position and setting the posterior teeth one tooth distally. Omitting the first bicuspid, in the reviewer's opinion, will produce a much more satisfactory occlusion.

In dealing with soldering and fluxes, essential points in the general procedure are covered.

The laboratory procedures in crown and bridge prosthesis are fairly sound and comprehensive. A reasonable description of the construction of dies and assembly of models is given.

To be read in conjunction with the chapter on crown and bridge prosthesis, is a chapter on Dental Electro-forming and Plating. The subject matter is simply explained and describes a satisfactory standard procedure.

At the moment, every effort is being made to place chairside procedures in dentistry on a scientific basis, and these can only be successful when laboratory procedures involved are similarly treated.

The looseness of expression, lack of scientific background and, in some instances, poor illustrations, detract from the value of this publication and limit its value to technicians who have already a considerable knowledge of dental mechanics.—C.H.G.

HYPNOTISM AND MESMERISM, by Roy E. Benn, Sydney, 1950. The Mesmer School of Hypnotism. *Our copy by courtesy of Angus & Robertson Ltd.*

This book is sub-titled, "Special Dentists' Course," and the introduction starts with the statement: "These lessons are not meant to be a text book on Hypnotism. They include all that you need to know of the science to make you a proficient operator." If the object is to help introduce the use of hypnotism into dental practice, then such an opening is not very promising. The suggestion that the dentist need not go to the trouble of studying the fundamental principles of the subject, but can get right on with the business of hypnotizing his patients, is not likely to be favourably received.

That hypnotism is a real phenomenon capable of being put to beneficial use by those who thoroughly understand it and appreciate all its implications seems beyond doubt. It is probable, too, that there is a real place for it in dental practice, but if it is to achieve such a place it will have to be presented in a scientific manner, and this "Hypnotism and Mesmerism" fails to do.

The book abounds with generalities and unsupported statements, the following, appearing on page 25, being an example of the latter: "It is wise to give a slight pressure to the temporal arteries in the temple, as you thereby reduce the flow of blood to the brain . . . . . " On page 34 one learns that "In

this stage (of hypnosis), it is possible for a patient to accurately diagnose his own particular complaint, or that of another person, by using that lucid insight which is often plainly evidenced in the somnambulistic stage of hypnosis." For this and many other surprising statements no supporting evidence of any kind is presented, nor is there any list of references.

Viewed from scientific standards, "Hypnotism and Mesmerism" can only be regarded as a very unsatisfactory presentation which will fail to inspire any confidence in the mind of the critical reader.—A.L.

INTERNATIONAL DENTAL JOURNAL, Vol. 2, No. 1, September, 1951. *Our copy by courtesy of Cassell and Co. Ltd., London.*

The September, 1951, issue of the *International Dental Journal* contains the first four of the reports to be presented at the XIth International Dental Congress in London in July, 1952, which has been referred to on page 73 of this Journal. This issue also contains a contributed review on Dental Caries.

(1) *Recent advances in Oral Histology, by Isaac Schour, p.* 10.

Schour in his review of the advances in Oral Histology has drawn attention to the main contributions which have been made in relation to the development, histology and chronology of enamel formation. The distinction between matrix formation and the calcification process is an important fact which, in spite of considerable experimental evidence in its favour, has not been universally accepted.

The appositional rate and the growth potential of the ameloblasts have been determined, using Alizarin Red S and sodium fluoride to give a better understanding of amelogenesis.

Reference is also made to the great field which has been opened by the introduction of the electron microscope and radio-active tracers in dental research.

This is a comprehensive and well authenticated report by a research worker pre-eminent in his own specialized field, and although dealing mainly with problems of an academic nature it outlines the basically practical methods to be employed in the solving of the problems which still confront the dental profession.

(2) *Unilateral hyperplasia of the jaws in the young, by Martin A. Rushton, p.* 41.

Although cases of unilateral benign hyperplasia are a relatively infrequent occurrence, the consideration of the aetiology and pathology of this condition is of interest.

The author distinguishes three conditions: (a) unilateral hyperplasia of the mandibular condyle, (b) unilateral hyperplasia of the jaws of prenatal onset and (c) fibrous dysplasia and ossifying fibroma.

The distinction is well drawn between the condylar hyperplasia and the hyperplasia of the jaws, which is associated with a "homolateral enlargement of the soft parts and other features."

Some interesting aspects of the aetiology of the condition of prenatal origin are considered in the light of the various cases reported.

The third condition of hypertrophy is a hyperplasia, where the bone growth shows a histological structure called "Osteitis fibrosa." The author points out that that condition should not be considered as neoplastic and that a "most conservative surgical technique should be adopted."

(3) *Significant developments that have contributed to the advancement of Oral Surgery, by Malcolm W. Carr, p.* 76.

Carr describes the various factors which have contributed to the development of Oral Surgery into the specialized branch of dental practice that it is today.

Firstly, educational trends, both undergraduate and postgraduate, give a greater opportunity for training in Oral Surgery. Carr points out that the tendency in America is to limit training in Oral Surgery at the undergraduate level and teach it at the graduate level and this practice is proving very satisfactory and has promoted Oral Surgery as an organised speciality by means of special hospital appointments, internships, specialized journals and societies.

Advances in Anatomy and Biochemistry and in surgical procedures and patient management have contributed to the progress in clinical practice. The author discusses concisely but informatively such subjects as antibiotics, haemorrhage, focal infection, cleft palate treatment and other aspects of maxillo-facial and oral surgery.

(4) *Dental public health service in Holland, by L. J. M. Spoorenberg, p.* 109.

The system of dental treatment in operation in Holland is very completely outlined in this paper, and is worthy of study, particularly in a period such as this, when the prob-

lem of social dentistry has become so important and the solution has not been found in the insurance schemes of Germany in pre-war years nor in the post-war attempt in Great Britain to solve the immense dental problems by nationalization, whilst at the same time the use of the partly trained auxiliaries has not met with a great deal of success in New Zealand.

The author quotes the F.D.I. resolution in Dublin in 1948, which is so important and fundamental to the problem that it cannot be repeated too often.

"The F.D.I. expresses its strong conviction that the dental health of the people of any nation can only be secured by the application of scientific measures of prevention and control of dental disease in children," and Spoorenberg says "Research into the prevention of dental disease is of high importance."

An important feature of the service is that the whole health service has developed out of private initiative and the "Government has been gradually included in its activities."

The inadequacies of the system are explained, but these are minor, when the independence of the scheme and the freedom from Government control are realised.

The objective of the public dental health being promoted by the individual dentists, self employed, is of prime importance in stemming the tide of state ownership or socialisation. In the course of the exercise of this right it is the obligation of the dentist to serve the patient conscientiously and to the best of his ability.

(5) *Prophylaxis as a practical method of reducing Dental Caries (contributed review), by Guttorm Toverud, p.* 131.

Toverud has presented a concise summary of the present methods of dental caries control.

He draws particular attention to the role of refined carbohydrates in dental caries susceptibility in relation to the effects of the wartime sugar shortage on caries rates in European countries. Mention is made of the important contribution of Sognnaes in relation to this problem of the double factor operating, a local environmental change and an increased resistance of the tooth itself, and this will be further clarified by investigation of susceptible and non-susceptible tooth surfaces using electron microscopy by Scott and Sognnaes.

The author refers to the use of fluorine as a "temporary emergency" and states that a "more natural means of attacking the caries problem" should be investigated.

It would appear, however, that fluorine is an essential element in the diet in producing caries resistance, and that caries susceptibility may be in part attributed to a fluorine deficiency. This view was expressed in England fifty years ago by Crichton-Browne and there seems no reason to change this concept.—N.D.M.

Information from the Dental Board

The following matters are reported from the meetings of the Dental Board of New South Wales held on 19th December, 1951, and 23rd January, 1952:—

PROFESSOR ARNOTT'S APPOINTMENT TO SENATE.

The President informed the Board that Professor Arnott had been appointed as a member of the Senate, University of Sydney. The Board's congratulations were extended to Professor Arnott.

RESTORATIONS TO REGISTER.

Fernon, Stanley Oliver; Harris, Robert; Mann, Kenneth J.; Reaney, Philip B.; Withers, William Harold Victor; Ward, Alfred J.

ADDITIONAL DESCRIPTIONS.

Chappell, Brian Wilfred, L.D.S., R.C.S., Edinburgh; Cusick, Alton Richard, D.D.S., Northwestern, 1951; Excell, John Osborne, D.D.S., Northwestern, 1951; Mann, Kenneth J., D.D.S., Northwestern, 1949.

ALTERATION OF NAMES IN REGISTER.

Baskey, Edith (Mrs.) to Seidler, Edith (Mrs.); Barber, Frederic Thomas to Barber, Eric Frederic Thomas; Reich, Harry to Rich, Harry.

OBITUARY.

Alexander, R. H.; Alford, L. E.; Barkley, W. M.; Brown, D. G.; Grosse, E. H.; Hart, L. B.; Kempthorne, J. B.; Parsons, A. T.; Preston, R. B.; Rawe, C. E.; Taylor, L. V.; Tyndall, H. G.; Wilson, A. A.

APPLICATIONS FOR REGISTRATION.

Registration was refused to the following persons: Bartlewski, J.; Chapman, A. J. M.; Krivanek, J.; Politis, P.

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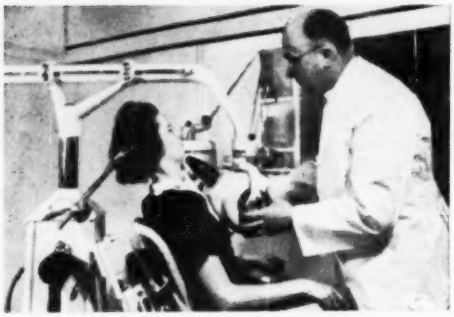

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The long life of the fine focus tube enables films to be produced which show exquisite detail.

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YOUR STATIONERY . . . should Reflect the Dignity of your Profession

When requiring Memorandum of Fees Forms, Record Cards or any kind of printed stationery, ask for our representative to call—we can assure you of quality and distinction at a moderate price.

Technical printing receives our special attention, and our extensive and exclusive range of matrices for the printing of formulae, Greek and mathematical signs and tabular matter enables us to execute this class of work at economic prices.

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Local Anaesthesia

No longer a luxury, but a recognised medium in modern practice. A comfort to operator and patient alike.

For Perfect Results, use :

Dentosthetic Procaine

(In two strengths : 1/1600 and 1/3000 adrenalin)

Dentosthetic Cocaine

Anaesthetic of outstanding merit

Obtainable from all regular Dental Depots or the Distributors :

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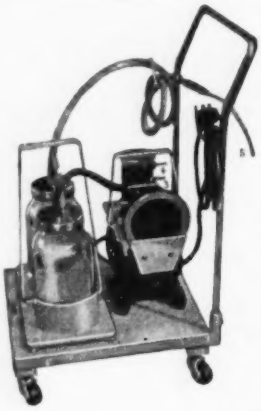
141-143 ELIZABETH STREET, SYDNEY

Phone : M 6794



CLEMENT'S ELECTRIC ASPIRATOR

(SUCTION UNIT)
MOUNTED ON TROLLEY
For Use in Exodontia and Oral Surgery

Adequate Suction necessitates the removal of large quantities of air to maintain sufficient negative pressure to be effective.
Quietness and Long Life necessitate slow-moving parts.
This pump fulfills the above requirements, as it has **large capacity, 40 litres of free air per minute, high vacuum, 29.7" H.G.,** and **low speed, 350 r.p.m.**
Vacuum Control can be fitted if required, so that suction can be set to any required degree, from the gentlest suction up to 29.7" H.G.

ADVANTAGES IN USE

Sponging with consequent risk of traumatization is eliminated.
Visibility of operative field is maintained by rapid removal of blood, saliva, etc.
During anaesthesia, rapid removal of debris is essential to eliminate risk of inspiration of foreign matter into the lungs.

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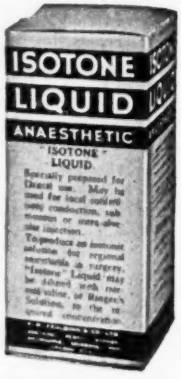
Faulding's ISOTONE LIQUID

Clinical demonstrations have shown Isotone Liquid to fulfil our expectations.

Reports from practitioners throughout the Commonwealth speak highly of its rapid and profound anaesthesia with total absence of toxosis and unpleasant post-operative troubles.

Isotone Liquid possesses all the qualities of a freshly prepared solution, and its self-sterilising non-toxic base ensures its keeping properties.

Isotone Liquid represents 2% Procaine Hydrochloride, 1-40,000 Adrenalin Chloride in an isotonic isoionic (pH 6.5) self-sterilising base.



2-oz. Vacuum Sealed Bottles

Less 10% for 1 dozen bottles.

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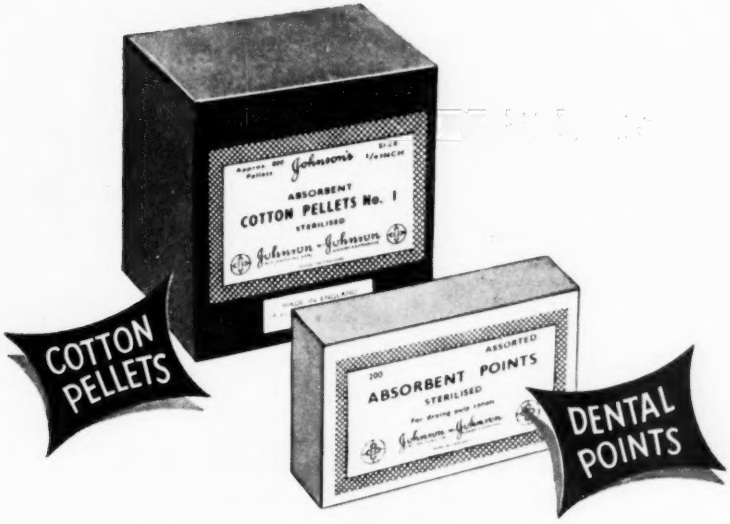
Adelaide :: Perth :: Melbourne :: Sydney :: Brisbane and London

..now *available!*



Johnson & Johnson absorbent Cotton Pellets are available once more. These sterilised ¼" Cotton Pellets are packed in cartons containing approximately 800. Their use in dental surgery affords considerable convenience, providing ready-made swabs of uniform size, shape, weight and absorbency.

Johnson & Johnson's sterilised absorbent points for drying pulp canals offer further convenience to the dental surgeon. Their fine, even taper and rigidity admits usage in canals inaccessible to ordinary drying mediums, whilst exceptional absorbency will eliminate moisture even beyond their limit of penetration.

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Johnson & Johnson
PTY. LTD. SYDNEY

MELBOURNE — BRISBANE — ADELAIDE — PERTH — HOBART

THE MOST TRUSTED NAME IN SURGICAL DRESSINGS

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VERNONITE

We wish to announce that we have on hand for direct supply to the profession—

IMPORTED VERNONITE

Special Price:

40/- per pack less 5% if five packs ordered.
40/- per pack less 10% if ten packs ordered.

AUSTENAL MICROMOLD PORCELAIN TEETH

The world's finest most natural teeth, manufactured in Australia from U.S.A. imported porcelain powders, are now available in the NEW SHADES and MOLDS.

Price, Anteriors	17/6 per set of six
Posteriors	12/- per set of eight
Tubes	3/6 each
Steele's Facings	6/6 each

Liberal discounts for quantities.

Mold and Shade Guides will be supplied on application.

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DENTAL SPECIALTIES PTY. LTD.

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*"XYLOCAINE"

The new, quick-acting local anaesthetic that cuts minutes from the time lag between injection and onset of anaesthesia. Anaesthetic effect is profound, widely diffused, and well within clinical ranges of tolerance.

Available in:

1.8 cc. Cartridges 2%	(Epinephrine 1.80,000)
20 cc. Vials 2%	(Epinephrine 1.80,000)
20 cc. Vials 2% SPECIAL	(Epinephrine 1.50,000)
20 cc. Vials 2%	(without Epinephrine)

"Xylocaine" is distributed in Australia for ASTRA, Sodertalje, Sweden, by

Commonwealth Dental Supply Coy. Pty. Ltd.

Also available from all authorised dental dealers.

*** "XYLOCAINE" is a Registered Trade Name.**

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OXYCEL

Use in Dentistry

OXYCEL designates oxidized cellulose prepared from various materials, such as gauze or cotton by a special process of oxidation which converts unoxidized cellulose into polyanhydroglucuronic acid—an absorbable haemostatic chemical.

OXYCEL, supplied as individual, sterile strips, effects prompt haemostasis when applied to oozing surfaces, and when left in contact with incised tissues is readily absorbed. When wet with blood it becomes slightly sticky and swells, forming a dark-brown, gelatinous mass. As soon as this discolouration occurs, bleeding usually ceases.

OXYCEL is supplied in glass vials each containing 1 sterile strip 5 ins. x ½ in. 4 ply.

FURTHER PARTICULARS ON REQUEST

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Royal Australian

Army Dental Corps

APPOINTMENT OF OFFICERS

Applications are invited for appointment to the Australian Regular Army of Dental Practitioners who are British subjects and qualified to practise in Australia.

Rank on enlistment is Captain with opportunities for promotion to Major. Appointment is for four years with right of termination after two years. After not less than one year's satisfactory service an officer may apply for permanent appointment until retiring age (normally fifty-five).

PAY AND ALLOWANCES

Annual rates of pay and allowances are shown in the following table These are subject to variations by cost-of-living adjustments.

RANK	*SINGLE—LIVING IN (per annum)*	*SINGLE—LIVING OUT (per annum)*	*MARRIED—LIVING IN or OUT (p.a.)*
CAPTAIN	£1,150	£1,299	£1,345
after 2 years	£1,204	£1,354	£1,400
after 4 years	£1,259	£1,409	£1,455
MAJOR	£1,342	£1,491	£1,537
after 2 years	£1,378	£1,527	£1,573
after 4 years	£1,413	£1,563	£1,609

GRATUITY AND RETIREMENT BENEFITS:

Subject to completion of at least two years' service, a gratuity of £125 per annum is paid to officers appointed to short service commissions. Contribution to the Defence Forces Retirement Benefits Fund is compulsory, but such contributions are normally refunded on termination of short service commissions.

LEAVE, PRIVILEGES:

Leave is granted on the basis of three weeks each year exclusive of Public Holidays. Initial issue of uniform and necessaries is free. Medical treatment, including hospitalisation, is available free to all members.

Full information is obtainable from the Assistant or Deputy Assistant Director of Dental Services at any of the undermentioned addresses:—

H.Q. Northern Command, Victoria Barracks, Brisbane.

H.Q. Eastern Command, Victoria Barracks, Sydney.

H.Q. Southern Command, Albert Park Barracks, Melbourne.

H.Q. Western Command, Swan Barracks, Perth.

H.Q. Central Command, Keswick Barracks, Adelaide.

H.Q. Tasmania Command, Anglesea Barracks, Hobart.

ISSUED BY THE DIRECTOR-GENERAL OF RECRUITING. ADOI.FP.32

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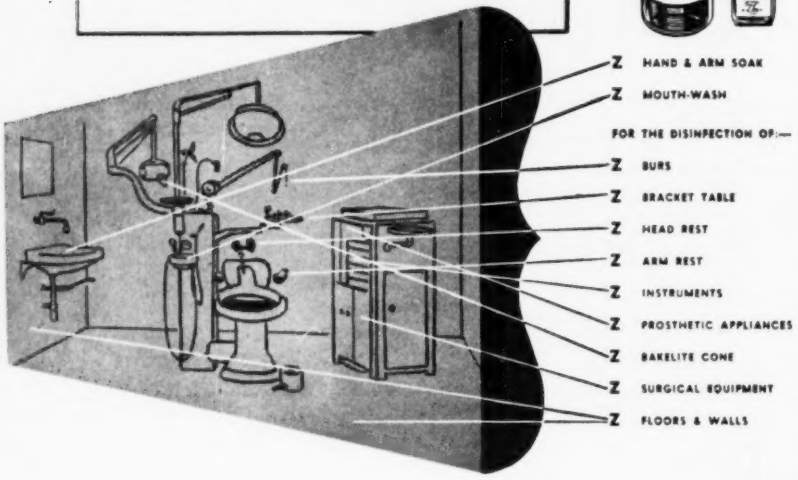
There's a vital place for

Zephiran Trade Mark

Brand of Alkyldimethylbenzylammonium Chlorides

in every modern surgery

DILUTED. Costs less than 1/- PER GAL.



Zephiran is an antiseptic of high germicidal and bacteriostatic potency. It offers a wide range of dental applications from the disinfection of cutting instruments to its use as an effective antiseptic on mucous membranes and skin.

BAYER Trade Mark

BAYER PHARMA PTY. LTD.

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CHILDREN LOVE CLEANING their TEETH WHEN the REWARD is a 'GOOD TEETH CERTIFICATE'

This "Good Teeth" Certificate featuring Alice and her friends has been specially designed for you to give to your child patients

Remember also that professional size tubes of Gibbs S.R. are available for distribution to your patients. Fill in the coupon below and forward to "Certificate" Box 1590, G.P.O., Sydney.

FREE!

Please forward supplies of (a) Gibbs S.R. Good Teeth Certificate.
(b) Gibbs S.R. Professional Size Tube.

(Strike out item not required)

NAME .....

ADDRESS .....

SR.56.FPT

SECONDARY NUTRITIONAL DEFICIENCIES

IN THE ADOLESCENT AND ADULT AGE GROUPS

—frequently not obvious—but the accompanying avitaminosis is yet another indication for the use of 'PENTA-VITE' ADULT FORMULA.

The concept of secondary nutritional deficiencies is relatively new but it is generally accepted that the following headings include many factors which can and do "condition" secondary vitamin deficiencies in patients, particularly the adolescent and adult age groups, receiving what would otherwise be an adequate diet.

1. Interference with Ingestion	e.g., economic state, ignorance, food fadism, alcoholism, anorexia of various origin, inadequate therapeutic diet, etc.
2. Interference with Absorption.	e.g., anatomical or chemical interference with intestinal mucosa, achlorhydria, biliary disease, therapy involving colloidal absorbants, paraffin, etc.
3. Interference with Utilization	e.g., hepatic dysfunction, diabetes, malignancy.
4. Increased Requirement	e.g., rapid rowth as in infancy and childhood, pregnancy, lactation, abnormal activity, fever, hyperthroidism, therapy increasing metabolic rate, senescence and old age, acute and chronic infections, etc.
5. Increased Destruction	e.g., achlorhydria, therapy involving arsenicals, sulphonamides, alkalis, etc.
6. Increased Excretion	e.g., polyuria due to various causes, lactation, therapy involving excessive fluid intake, etc.

ADULT FORMULA

'Penta-Vite'

Formulated to provide daily to each age group the **full** vitamin intake recommended by the National Research Council of U.S.A. (1948).

ADULT FORMULA
Children over six years and adults.

INFANT FORMULA
Infants and children to 6 years.

Ethical Division **NICHOLAS PTY. LTD.** Melbourne, Sydney, Brisbane, Adelaide, Perth

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The key to a better Dental Practice

Increase your practice; banish your patients' fear of pain and discomfort; ensure proper dental care through patients' more regular attendance. Nitrous Oxide-Oxygen anaesthesia opens the door to a successful dental practice.

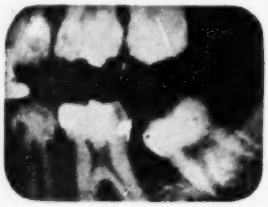
'Phone today for literature.

ANAESTHESIA WITH NITROUS OXIDE-OXYGEN

C.I.G. (New South Wales) PTY. LTD.
138 Bourke Rd., Alexandria, N.S.W.

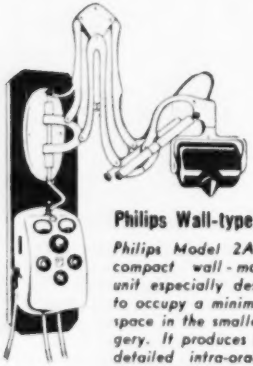
A subsidiary of The Commonwealth Industrial Gases Limited, Sydney

CIG MEDICAL SECTION

1. 

2.

What would have been your diagnosis?



Philips Wall-type Unit

Philips Model 2A is a compact wall-mounted unit especially designed to occupy a minimum of space in the smaller surgery. It produces highly detailed intra-oral and jaw radiographs quickly and easily.

3.

1. The hidden caries.
2. The distressing supernumerary.
3. The unexpectedly absent permanent tooth.

The negatives above are actual reproductions of X-Rays taken by a leading Macquarie Street Dental Surgeon, whose diagnoses are listed above.

What would have been your diagnosis without efficient X-Ray? These negatives clearly reveal the many unsuspected dangers that can be detected only by X-Ray.

That's why it is always a sound principle to X-Ray your subject if you are not quite sure of its case history.

PHILIPS DENTAL X-RAY APPARATUS

PHILIPS ELECTRICAL INDUSTRIES OF AUSTRALIA PTY. LTD.

SYDNEY • MELBOURNE • BRISBANE • ADELAIDE • PERTH

X5A-50

For unwanted bleeding in dental surgery

An absorbable haemostatic

Gelatine Sponge A & H has a particular application in dental surgery for those cases of primary and secondary bleeding which are undesirable and which are often difficult to control by ligation. It minimises blood loss and, because it is completely absorbed, obviates the necessity for subsequent removal from the site of application.
Gelatine Sponge A & H . . .

(1) Completely effective as a hæmostatic.

(2) Does not inactivate, and can be used in conjunction with antibiotics such as penicillin or streptomycin.

(3) Consists only of purest Gelatine, therefore of animal origin and thus tendency to foreign body reaction is reduced to a minimum.

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(5) Is transparent to X-rays.

(6) Is pliable and can be moulded easily to any shape or size.

(7) Is stable to heat and has been sterilised by heat.

(8) Value in Dental Surgery proved by widespread trials by prominent Dental Surgeons in many countries throughout the world.

It is supplied sterile in three sizes.

No. 1. Strips 2cm. x 6cm. x 0.7cm. in glass tubes each containing one piece; packages of six.

No. 2. Strips 10cm. x 20cm. x 0.1cm. in glass tubes each containing one piece; single tubes.

No. 3. Thin Wafers 2cm. x 2cm. x 0.1cm. in glass tubes each containing six pieces; packages of six.

GELATINE SPONGE A & H

Literature and fullest information will gladly be furnished on request.

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SURGICAL INSTRUMENT SHOWROOMS: 41 HUNTER STREET, SYDNEY

AH. 21. FP.

Your guarantee of consistent quality

Every package of "Kallodent" dental acrylic is backed by ICIANZ technical service and quality control.

The powder is of uniform quality.

The liquid is not *merely* acrylic monomer —it is a specially refined grade prepared for one purpose; dental work. These two components have been developed to give specific results under known conditions —and to give them *consistently.*

ICIANZ technical service is freely available to all "Kallodent" users.

WARNING: No responsibility can be accepted by ICIANZ for the performance of either "Kallodent" powder or liquid if it is used with any material other than its opposite liquid/powder component.

ICI

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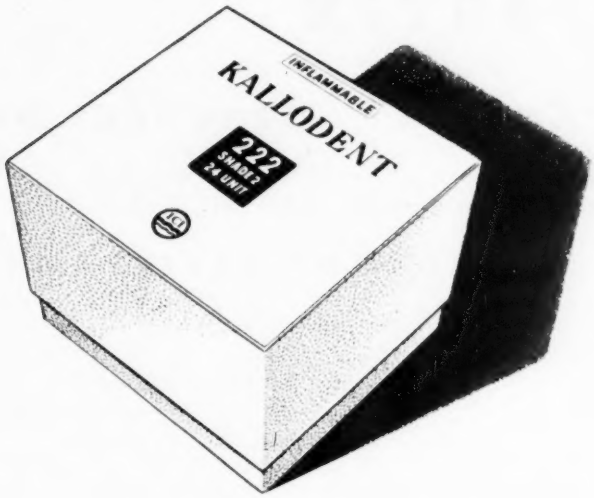
Price rise prevented!



For a time it appeared that a price increase for "Kallodent" was imminent. A way out has been found — and something better.

By replacing the "multi" pack (12 units) with a 24-unit pack, not only has a price increase been averted, but an improved package can be adopted *and a saving passed on to you.*

In March, the popular "Kallodent" 222 Shade 2 will be introduced in the new "DOUBLE MULTI" pack, and the packaging programme provides for other shades to follow.

Ask your depot representative about the new "DOUBLE MULTI" pack.

"KALLODENT"

DENTURE BASE MATERIALS

IMPERIAL CHEMICAL INDUSTRIES *Plastics Division* ICI OF AUST. & NEW ZEALAND LTD.

KAL. 6.X.696

PORTEX

"Co-pol" Denture Base

Ethyl-methyl methacrylate Co-Polymer

FRACTURE-RESISTANT

having all the well-known attributes of acrylics

PLUS very much greater RESILIENCE

(Light, Mid and Dark Pink and Clear)

From All Dental Supply Depots

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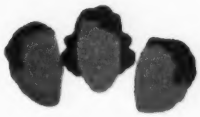
The Discerning Choice . . .

FOR NATURAL RESTORATIONS



"Anatoform" New Hue moulds are designed and classified for harmony of face and tooth form.

Patented, precision methods of moulding produce standardised sizes for each "Anatoform" New Hue form.

Shades can be accurately selected for edentulous patients of all ages from the twelve colour-tones of the "Anatoform" New Hue Vitality Scale.

Fully contoured mesial and distal surfaces make it possible to position "Anatoform" New Hue Teeth for the best æsthetic and functional results.

"ANATOFORM" *Regd.*

NEW HUE

FINE PORCELAIN TEETH

Manufactured under patented processes for

THE AMALGAMATED DENTAL CO. LTD. (INCORPORATED, LONDON, ENG.)
124 Exhibition Street, MELBOURNE and at 160 Castlereagh Street, SYDNEY

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The Arcade,
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BAKER'S ARISTALOY
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GETZ 400 IMPRESSION ALGINATE
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Ring your Dental Supply House

Why 'OXYGEN-CLEANING' merits your professional recommendation

Because of the efficiency of oxygen as a cleaning agent, you may confidently recommend 'Steradent' as a denture cleaner. 'Steradent' cleans dentures by means of the gentle penetrating action of oxygen.

When dentures are immersed in a solution of 'Steradent' and water, active oxygen is carried into every corner and crevice. Thus, the whole plate is freed from stains, disinfected and deodorised.

'Steradent' is suitable for all types of dentures.

Steradent REG'D

Specially made to 'oxygen-clean' dentures

5612

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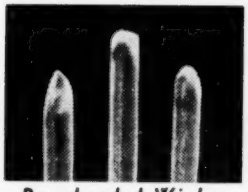
ROUND-ENDED natural bristles make 'Wisdom' a real tooth-and-gum brush

Smooth
TISSUE-TONING
Comfortable



Round-ended Wisdom bristles

Ordinary knife-end bristles

You have been telling your patients for years and years that massage of the gums is just as important as cleaning the teeth. Yet it has always been hard to get patients to follow this advice when they found that toothbrushes with knife-sharp bristles gave them tender, bleeding gums.

Wisdom has solved the problem by giving every bristle an individually *rounded* end. These Wisdom bristles are so smooth they give gums a stimulating massage without any discomfort.

Another important point—*the arrangement* of the bristles on every Wisdom brush ensures the most thorough cleansing of the teeth. Recommend Wisdom brushes to your patients.

Wisdom **TOOTHBRUSHES**

FREE DELIVERY TO ALL STATES

(ESTAB. 30 YEARS)

"For Quality and Economy in all your Printing."

LAWSON & BRAY (Sales)

All kinds of Dental Stationery and Chart Cards. Let us know your requirements and samples with prices will be sent.

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CO-AG and CO-AG-SED

CLINICALLY-PROVED DENTAL HAEMOSTATICS

CO-AG and CO-AG-SED are indispensable to the busy practitioner. They are available from Chemists and Dental Depots.

For Positive Control of Haemorrhage and Relief of Post-Operative Pain and Soreness.

Use, and prescribe with confidence, CO-AG and CO-AG-SED.

- Fully proved by clinical test, for the prophylaxis and treatment of dental haemorrhage.*
- Co-Ag is orally administered and quick in action.
- Non-toxic, non-irritant, entirely reliable.
- Co-Ag gives positive haemorrhage control.
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New South Wales Branch

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For full particulars, apply to the—

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All members of the New South Wales Branch of the Association and other subscribers are asked to peruse the advertisements herein and to support those dental supply houses and others whose announcements are published in "The Dental Journal of Australia."

HELP THOSE WHO HELP YOU

POLY-PLAST

POLY-PLAST catalysed with **DURAN** is a **COLD-CURING** and **COLOUR-CONSTANT** acrylic material. Becomes **STONEHARD** in 6 minutes at mouth temperature.

In 8 basic shades, assorted in boxes of 8, 3 or single colours.

DURAN-CATALYST

DURAN is a Swiss invention which, added to any acrylic base or acrylic filling material, induces self-polymerising and hardening at normal body temperature.

DURAN makes it possible for every Dentist or Dental mechanic to repair a denture with the same acrylic powder from which it was made, without change in shade.

Sold in small tubes.

Manufactured by Prothoplast Co. Ltd., Rothrist, Switzerland.

67 ODUS ALLOY

IS THE CLASSIC COMPOSITION OF DR. BLACK, 67 PER CENT. SILVER, 27 PER CENT. TIN, 5 PER CENT. COPPER, 1 PER CENT. ZINC. Silver content corresponds to the **Specification of the American Bureau of Standards.**

Manufactured by Odus Dental Co. Ltd., Dietikon, Switzerland.

NEOS RUBY DISCS, RUBY ACRYLIC TRIMMERS & RUBY CARVERS

NEOS RUBY DISCS have the same abrasive power as the diamond discs and produce a very nice smooth effect. Sizes: $\frac{1}{4}$, $\frac{1}{2}$ or $\frac{1}{1}$.

NEOS RUBY TRIMMERS work quickly, are very resistant in use, develop very little heat, there is no danger of deformation of the denture.

NEOS RUBY CARVERS for accurate finishing work of all Dental Acrylic material.

Manufactured by Neos Dental Co. Ltd., Geneva, Switzerland.

Stocks available at

Associated Dental Products Pty. Ltd.

M 4380. **185 Elizabeth Street, Sydney.** **MA 3278.**

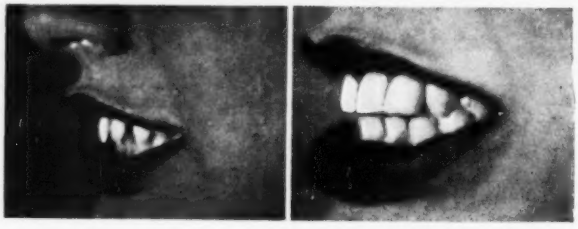
Transparent Odus Acryl Crown

for making individual jacket crowns of synthetic resin in the mouth of the patient.

The Odus Acryl Crown used in Treatment of a Diastema by Dr. Fred Zlaty, Dentist, La Paz, Bolivia, South America.

APPEARANCE OF TEETH.

before treatment, **after treatment.**



before treatment, **after treatment.**

In every country in the world, the Odus Acryl Crowns are proving of very great value and help to the profession.

Ask your dealer for mould charts and a copy of Dr. Simons' brochure, which gives you full information for working with the Odus Acryl Crown.

The Odus Acryl Crowns are in stock at:

Associated Dental Products Pty. Ltd.

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and also obtainable at your normal supply house in every State.

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Australian representative:

MARTIN HALAS, Box 1996 G.P.O., Sydney.

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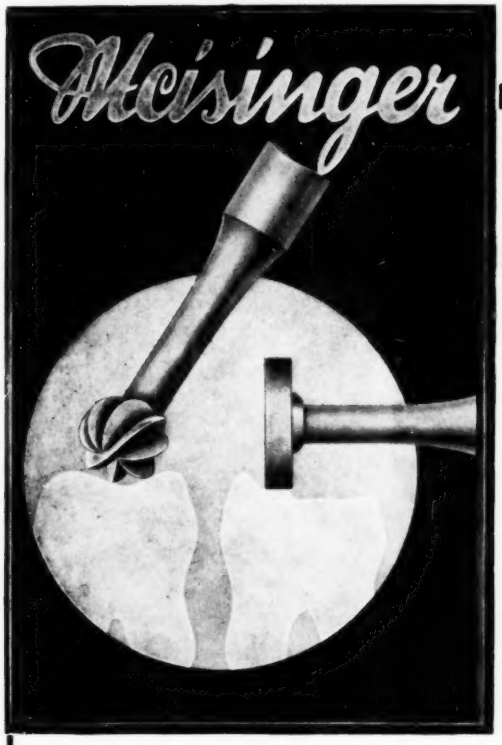

MEISINGER

DENTAL BURS
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